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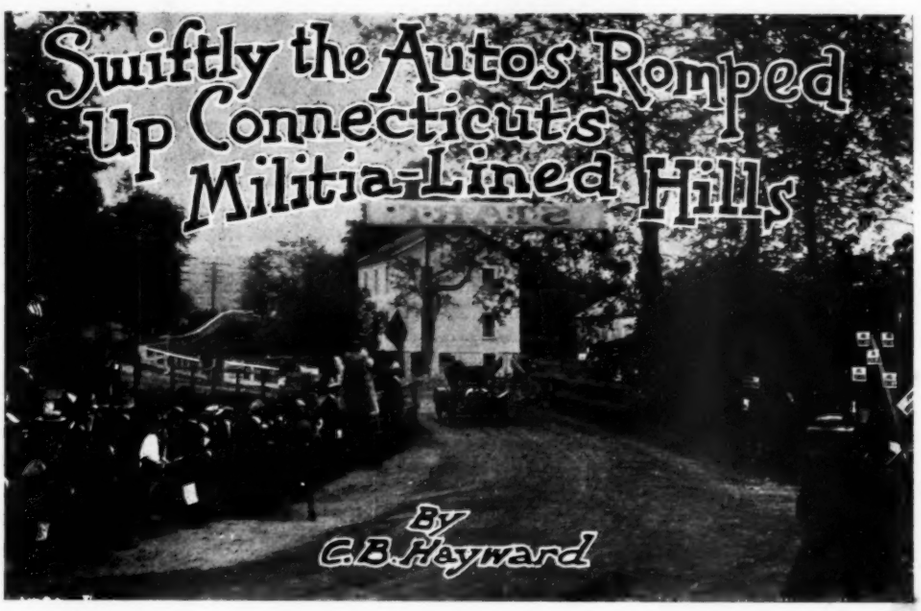
THE AUTOMOBILE



Driver Pollard Ready with His Winning Maxwell Crossing the Bridge at the Start.

BRIDGEPORT, CONN., May 30.—Practically every winner above the small car class took a whack at Tracy's record of 1:24 2-5 for Sport Hill, made last year in a Locomobile, and many substantial slices were taken out of it. Al. Poole, Tracy's former mechanic, lowered it to 1:17 flat, thus making a new low-water mark for the year, in his 50-horsepower Isotta, which accordingly was the winner of the Board of Trade Cup. Arthur Bell's Columbia made the next best time in the free-for-all by finishing in 1:19 4-5, while in the event preceding the free-for-all, which was the wind-up of the program, K. W. McNeil, in a 60-horsepower Stearns, took a few seconds off the record by winning in 1:20 3-5, while Harry Tuttle's 36-horsepower Stoddard-Dayton also came under last year's figures by making it in 1:22 3-5. This was event No. 8 on the well-filled entry list, and was for amateur drivers of gasoline cars, the trophy being the Craufurd cup.

Poole was the first to better Tracy's figures, and as he cut 4 2-5 seconds off them without knowing the hill and its winding turns, it was evident that he would do considerably better when it came to the free-for-all, as events later proved. This was in Event No. 7, in which the Isotta was entered as a stock car in the $4,001-and-over class for the H. D. Miller cup, but upon examination by the technical committee the car was found to have no lamps or mud guards, and was accordingly protested as not being a stock car within the meaning of the regulations. Poole was permitted to make a time trial, however, doing the distance in 1:20. C. F. Alcott's 60-horsepower Stearns negotiated the hill in 1:23 flat, while K. Swain, driving another Stearns of the same power, made it in 1:25.

Unpropitious weather bade fair to spoil the elaborate preparations made by Chairman Ralph Sperry, of the executive committee of the Automobile Club of Bridgeport, and his numerous assistants, for the second annual climb of Sport Hill, as there was a heavy drizzle that continued up to within a few hours of the start, and that promised to convert the carefully oiled roadway of the hill into a most dangerous slide. But the clouds held off for several hours, and, although continually threatening a downpour, made as fine weather for such an event as could have been had to order. Nor did the overcast sky throw any damper on the popular interest in what is now regarded as Bridgeport's banner automobile event of the year, for the roads from the city were alive with people as early as 6 o'clock, although the climb was not scheduled to start until two hours later. Thousands poured out to line the course from top to bottom, but so well did Captain Hawes' men of the Coast Artillery do their work that never for a moment was the road encumbered or the spectators allowed to depart from the side lines, for the khaki-clad men with their guns looked very business-like.

The same efficient management characterized the running of the entire event, so that everything was in clockwork order when Referee A. L. Riker gave the word for the start of the little Maxwell in Event No. 1, which was for gasoline cars listing at $850 or less. People who have been accustomed to associate the diminutive "two-lunged" runabout with a rate of travel that

Isotta Winning Free-for-All and Bridgeport Cup.

Driver K. W. McNeil and His Stearns in the Trial in which that Car Captured the Craufurd Cup.

implied no excess of power for such a thing as overcoming a stiff hill, opened their eyes wide when Pollard dashed over the bridge just before the timer's box, going "all out" and sounding so like the business end of a big racer in the distance that it

Tuttle and His Two-Event Stoddard-Dayton Winner.

only lacked the familiar long drawn out "caar coming" to imagine one's self in attendance at one of the big classics of the year. The lay of the land lends itself admirably to the purpose of a hill-climbing contest, and the various committees in charge

Forbes and Overland Which Won the Second Event.

of the course had taken full advantage of it. The start was located on a level stretch, two or three hundred yards before reaching the elevated stand of the referee and timer, while intervening there was a curve and a sharp dip, ending at the bridge mentioned. This little grade gave the contestants excellent opportunity to get into their best stride in an unusually short distance, so that when they passed under the wire they were in excellent shape to tackle the stiff straightaway grade that stretched up in full view of the starter for fully an eighth of a mile or more.

The course had a natural bank to it on the turn that lay under the wire, and it was evident even to the inexperienced spectator that the driver who negotiated this first turn successfully gained fifths of a second in his getaway. Pollard evidently appreciated this, for he took the little Maxwell around the inside line of the curve as cleanly as if he had not been going more than ten miles an hour, and there was no trace of his passage on the road after he had gone by. Climbing Sport Hill in racing time is no child's play, for it is a big bump—as big and businesslike an affair in the shape of a hill as is to be found anywhere in the East, within easy reach of a city, and it has a few singles and a double twist that compel respect and admiration from the man who knows what it is to take a car round them when it is a case of getting there quickly. But Pollard took the Maxwell round them in masterly fashion, and his time of 2:05 2-5 showed what was to be expected of the bigger contestants in the shape of record-breaking. There were originally three entries in this class, but the Buick, entered by H. J. Koehler, had been withdrawn, so the Ford runabout, No. 14, handled by J. G. Hyde, was the second to start. Hyde lost much of the advantage gained on the preliminary spurt by not taking the first curve right, a skid there robbing his attack on the first long grade of much of its ginger, which doubtless accounted for the Ford's poor time of 2:33. This stretch represented a good 10 per cent. grade, culminating in a short sharp rise, followed by a sharp turn to the left, and as the hill is unique in having no "back-dips," every single foot of it being up-grade, the advantage lost there could not be regained during the rest of the climb. With the exception of the dip preceding the start and the straightaway on the level at the top, that lent excitement to the finishes, there is not a foot where speed, once lost, can be regained.

An Overland and Reo were the sole entrants in Event No. 2, for cars listing from $851 to $1,250, which made it a second battle of two cylinders versus four, but in this case the result was reversed. T. C. Forbes, driving the 22-horsepower Overland, brought a cheer from the crowd when his time of 1:43 1-5 was announced, Lockwood's 16-horsepower, two-cylinder

Reo not having been able to do better than 2:13 3-5. Forbes had another go at the hill in Event No. 3, but did not do as well, the honors going to Ralph Burman's 30-horsepower Jackson in 1:39 4-5. The 28-horsepower P. & S. Skimabout looked so extremely business-like that great things were predicted for it, but its performance proved a disappointment, Manville not doing better than 1:51.

Harry Tuttle, driving a 30-horsepower Stoddard-Dayton, was the first to make an appreciable inroad into the figures by lowering the time to 1:29 flat in Event No. 5. W. Bogue's Knox was second in 1:32. Tuttle had a second try at the hill in Event No. 6, in which he was the sole starter, C. M. Murphy's Stevens-Duryea "Light Six" having been scratched, but he was several seconds slower. Excitement ran high when C. F. Alcott's 30-60 Stearns proved to be the first to cut under Tracy's record of last year by making the climb in 1:23, while a second Stearns, driven by K. Swain, made it in 1:25.

Then came the event that was expected to furnish an amount of interest, only second to the final free-for-all. The spectators were not disappointed, as K. W. McNeil's Stearns set the lowest official figures so far by making it in 1:20 3-5, while Tuttle bettered his previous efforts in the Stoddard-Dayton by coming home a good second in the contest for the Craufurd cup for amateur drivers, his time being 1:22 3-5. The free-for-all was naturally the crowing event of the day's sport, Poole making the climb in 1:17, the performance of Arthur Bell's Columbia in 1:19 4-5 furnishing considerable of a surprise. The summaries:

GASOLINE CARS, $850 AND UNDER.

No.	Car.	H.P.	Driver.	Time.
1.	Maxwell	12	W. Pollard	2:05 2-5
14.	Ford	15	J. G. Hydg	2:33

GASOLINE CARS, $851 TO $1,250.

3.	Overland	22	T. C. P. Forbes	1:43 1-5
4.	Reo	16	W. Lockwood	2:13 3-5

GASOLINE CARS, $1,251 TO $2,000.

6.	Jackson	30	R. Burman	1:39 4-5
5.	Overland	22	T. C. P. Forbes	1:46

GASOLINE CARS, $2,001 to $2,500.

10.	Tiley	32	C. B. Tiley	1:54 2-5

GASOLINE CARS, $2,501 TO $3,000.

15.	Stoddard-Dayton	36	Harry Tuttle	1:29
14.	Knox		W. Bogue	1:32

GASOLINE CARS, $3,001 TO $4,000.

16.	Stoddard-Dayton	36	Harry Tuttle	1:36 4-5

GASOLINE CARS, $4,001 AND OVER; MILLER CUP.

24.	Stearns	30-60	C. F. Alcott	1:23
19.	Stearns	30-60	K. Swain	1:25

CRAUFURD CUP FOR AMATEUR DRIVERS, GASOLINE CARS.

33.	Stearns	30-60	K. W. McNeil	1:20 3-5
27.	Stoddard-Dayton	36	Harry Tuttle	1:22 3-5

Jackson Which Won in Its Class, and Driver Burman.

FREE-FOR-ALL BRIDGEPORT BOARD OF TRADE CUP.

26.	Isotta	50	Al. Poole	1:17
51.	Columbia	29	Arthur Bell	1:19 4-5

The event was run under the auspices of the Automobile Club of Bridgeport, the officials being as follows: Referee,

Miller Cup Winner Stearns and Its Owner, C. F. Alcott.

A. L. Riker; executive committee, Ralph M. Sperry, President Frank T. Staples and Secretary F. W. Bolande; clerk of the course, Gregory S. Bryan; starter, J. B. Lyford; timer, A. L. McMurtry, besides which there were half a dozen umpires.

Patronage of the Lemonade Stands Was Generous at the Foot of Sport Hill Before the Start.

FAST TIMES MADE BY AMATEURS AT NEW HAVEN

NEW HAVEN, Conn., May 28.—Although yesterday's races up Shingle Hill were mainly for amateurs, some of the professionals were there to lend excitement to the big car events, though it was noticeable that their performances detracted but little from that of their non-professional brothers. As a venue for a hill-climb, the rise that goes by the name of Shingle Hill is one well calculated to tax the skill and daring of any driver, and that there were no accidents of any moment on the twisting turns was considered remarkable. There were some very close escapes, and the manner in which the cars were handled drew cheers from the crowd. This was noticeable in the case of Thompson Dill's masterly handling of the Apperson, the manner in which the Stearns and Locomobile pilots got around the twists, and the skillful avoidance of a telegraph pole by N. B. Whitfield in the Oldsmobile.

In the first event for cars of 200 cubic inches displacement, T. C. Walker took the Ford up in 1:30 4-5, while in the second class, cars up to 400 cubic inches, W. A. Burke, in a Knox, cut this to 1:12 1-5. Harry Tuttle was second in a Stoddard-Dayton, in 1:17 1-5, and Dill's Apperson was third, in 1:18 1-5. In the class for cars up to 550 cubic inches, inclusive, D. B. Brown's Fiat brought the record down to 1:06 4-5; J. S. Joyce's Locomobile was second, in 1:15 1-5; and W. C. Decker's Thomas third, in 1:15 4-5. W. W. Swan, in the Stearns, figured as a winner in the big car event, those having a cylinder volume in excess of 550 cubic inches, by making the hill in 1:07 3-5, his nearest competitor being Joyce's Locomobile in 1:15 2-5, Russell Lord's Peerless Six and Prossen's Bianchi tying at 1:15 3-5, while L. G. Hall's Stearns followed in 1:18 2-5

The free-for-all was looked forward to with considerable interest, but did not equal the times of other events, W. W. Swan's Stearns being an easy winner, in 1:10 flat, Burke's Knox being second in 1:11 3-5, and Egbert Lillie's Itala third, in 1:12 2-5. Silver cups were awarded the winners, and in addition D. B. Brown was awarded a gold medal for the fastest time made by an amateur, while Egbert Lillie received a silver medal for second. F. B. Wittemore received the medal for making the fastest time by a member of the Yale Automobile Club, his time being 1:12 4-5, while J. S. Joyce got the medal for second place. The summaries follow:

GASOLINE CARS UP TO 200 CUBIC INCHES CYL. VOL.		
Ford	T. C. Walker	1:30 4-5
Buick	Lee	1:35 2-5
GASOLINE CARS, 201 TO 400 CUBIC INCHES CYL. VOL.		
Knox	W. A. Burke	1:12 1-5
Stoddard-Dayton	H. Tuttle	1:17 1-5
GASOLINE CARS, 401 TO 550 CUBIC INCHES CYL. VOL.		
Fiat	D. B. Brown	1:06 4-5
Locomobile	J. S. Joyce	1:15 1-5
GASOLINE CARS, MORE THAN 550 CUBIC INCHES CYL. VOL.		
Stearns	W. W. Swan	1:07 3-5
Locomobile	J. S. Joyce	1:15 2-5
GASOLINE TOURING CARS, FULL EQUIPMENT NOT OVER 550 CUBIC INCHES.		
Thomas Forty	W. A. Maynard	1:26 4-5
Stevens-Duryea	J. W. Matthews	1:32 4-5
FREE-FOR-ALL CARS, ANY MOTIVE POWER.		
Stearns	W. W. Swan	1:10
Knox	W. A. Burke	1:11 3-5

STEARNS WINS 100-MILE AT BALTIMORE.

BALTIMORE, June 1.—On Decoration Day, at Pimlico, the first races under the auspices of the Motor Car Racing Association of Maryland were held. The feature event was a 100-mile championship race, which was won by the 60-horsepower Stearns car, owned and driven by E. L. Leinbach. His time was 2 hours and 47 seconds. In this event the 45-horsepower Acme car, owned by the Acme Motor Car Company, and driven by Jerry Price, went through a fence near the spot where Cedrino was killed on Friday. The summary of events follow:

FIVE MILES.—STOCK TOURING CARS FROM $2,000 TO $3,000.			
1. Oldsmobile	36	A. L. McCormick	6:21
2. Moon	32	E. L. Leinbach	
TEN MILES.—MARYLAND RUNABOUT CHAMPIONSHIP: STOCK TOURING RUNABOUTS OR TOUR.			
1. Pullman	40	Robert Morton	11:45 4-5
2. Pullman	30	C. B. Kirkman	
FIVE MILES.—40.1 TO 60-HORSEPOWER, INCLUSIVE.			
1. Stearns	60	E. L. Leinbach	5:31 2-5
TEN MILES.—PIMLICO FREE-FOR-ALL HANDICAP.			
1. Stearns	60	E. L. Leinbach (scratch)	11:07
2. Pullman	40	Robert Morton (23 sec.)	
3. Oldsmobile	36	A. L. McCormick (45 sec.)	
HUNDRED MILE CHAMPIONSHIP.—STRIPPED STOCK CARS OR CHASSIS.			
1. Stearns	60	E. L. Leinbach	2:00:47
2. Pullman	40	Robert Morton	2:30:47
SPECIAL EVENT.—FIVE-MILE MOTORCYCLE CHAMPIONSHIP.			
1. Indian		H. Matthew Gault	6:31
2. Indian		W. F. Fisher	
3. Indian		Chick Thomas	
4. Indian		A. L. Bear	
5. Indian		George Lewis	
6. Indian		Harry F. Fisher	
7. Indian		William Rasmussen	

MOTORCYCLEDOM TO HAVE A GLIDDEN TOUR.

Motorcycledom fraternity, after automobiledom, is to have an annual long distance tour on the lines of the Glidden Trophy competition. It will be promoted by the Western District of the Federation of American Motorcyclists, and cover a route of some 1,100 miles, with its start at New York on July 6 and its finish at Chicago. The competition will be by club teams. An economy test and a hill-climb will be held en route.

RECORD ENTRY FOR THE JAMAICA TRIALS.

Indications point to the straightaway time trials on Hillside avenue, Jamaica, to-morrow, being numerically the greatest race meet in the history of the sport in this country. When the entries closed on Tuesday, close to 200 had been made with 51 competing cars. The entrants embrace a large majority of the brands handled in the metropolitan district. The makes represented are as follows: Thomas, Isotta, Mercedes, Fiat, Hotchkiss, Mora, Wolsley, Corbin, B. L. M., Haynes, Ford, Pope-Hartford, Rainier, Allen-Kingston, Pennsylvania, Palmer & Singer, Mitchell, Cadillac, Peerless, Acme, Midland, Meyer, Jackson, Crawford, Stearns, Pullman, Christie, Imperial, Simplex, and the Stevens-Duryea.

The racing will begin at 1 o'clock. There are 24 events carded pretty evenly distributed at a kilometer, a mile, and two miles.

A parade open to all is to precede the racing, participants in which are promised excellent sparking space free.

BAY STATE'S MEET POSTPONED TO JUNE 17.

BOSTON, May 30.—The great crowd of people that assembled at Readville track this afternoon for the annual races of the Bay State Automobile Association was forced to go away disappointed, for after waiting more than an hour for the track to dry out the meeting was postponed to June 17. Everything was in readiness for the races, and the track was in excellent condition, when a sudden shower descended. It lasted only a few minutes but that was sufficient to spoil the track for racing purposes, though more rain fell later.

LONG ISLAND HAS ANOTHER CLUB.

HUNTINGTON, N. Y., June 1.—The large number of autoists resident in this village and vicinity have finally gotten together and have organized the Huntington Automobile Club, of which Daniel M. Gerard has been elected president; F. E. Ruland, secretary, and C. Barclay Ward, treasurer. The club will signalize its existence by holding an automobile carnival July 15.

Willie Haupt in His Great Chadwick Six Climbing "Giant's Despair" in 1:38 2-5.

WILKES-BARRE, PA., May 30.—Unless the American automobile manufacturer and driver cease their efforts to belittle the difficulties of "Giant's Despair," someone will be compelled to put on his thinking cap and suggest a name more in consonance with the facts. To-day's setting sun looked down upon a course strewn with fragments of shattered records. The breaks were none of your puny little chips off here and there, either—they were real damaging fractions, with huge chunks missing, which sadly marred the picturesqueness of the former figures. The course record was thrice maltreated in this way. The first time it was a mere chip—4-5 of a second off the White steamer's 1:49 4-5, made last year. The Stevens-Duryea Big Six, P. J. Robinson up, was the assailant. A few minutes later Willie Haupt, in the Great Chadwick Six, carved off a generous slice of 7 3-5 seconds from the Stevens-Duryea's figures, with a trip up the 6,000 feet of mountain road in 1:41 2-5. And then Haupt, just to show that the Chadwick's performance was not a piece of mere luck, repeated in 1:38 2-5—a three-second chunk this time. When it is recalled that the Chadwick's figures represent a lowering of the best previous gasoline time (Matheson's 1:59 2-5) by an even 21 seconds, and that they are 1 3-5 seconds under the wonderful mark made by Bill Wray on his 6-horsepower Simplex-Peugeot motorcycle last year, Haupt's driving can be characterized as little short of wonderful.

Eight times was the course negotiated under two minutes—thrice by the Chadwick, twice by the Stevens-Duryea, and thrice by a brace of Stanley steamers. There were many regrets expressed that the recent accident to Walter White prevented the White car from competing. Not only did the Wilkes-Barre Automobile Club officials desire to show Mr. White that they were hide-bound sports and harbored no malice as a result of past disagreements, but they wanted him and his cars there, and arranged their program accordingly.

When the first race was called at 8:30, the weather promised rain. After the Ford had nosed out the Maxwell in the $850-or-under gasoline class by a matter of three seconds, Jackson's 20-horsepower Mitchell had a walk-over for the $851-to-$1,250 gasoline class first prize, just jogging up the mountain in 4:02 3-5. When the third event for $1,251-to-$2,000 gasoline cars was finished, it was found that the Type 19 Acme, driven by E. Lengle, with a trip in 2:45 2-5, had made the best time; but the Acme's claim to the first prize has been disputed by W. F. Smith, the Philadelphia Rambler manager, in behalf of his entry, driven by Herbert Bitner, which got to the top with a flat tire in 4:08 1-5. The Ramblerites claim that the Acme Company does not make a $2,000 car, and that their catalogue fails to show a car at that price. The Committee reserved its decision.

The first real evidence of speed was given in the fourth event, for $2,001-$3,000 gasoline cars, when the Stoddard-Dayton "45" negotiated the mountain in 2:14 2-5. The Pennsylvanians endeavored to put in their special Pennsylvania "50," a Vanderbilt Cup car, as a post entry, but the Stoddard-Daytonites, who had made the best time of the day up to that point, put in a most strenuous protest, which was upheld.

After John Dower's Model "O" Corbin "30" had made the trip to the top in 2:45 1-5 in the fifth event—steam or gasoline stock cars selling for $2,001 to $3,000—in a sharp shower, time was called to give J. Pluvius a chance to change his mind. Another half hour to allow the course to dry off and to get the tens of thousands of spectators back to their dripping roosts along the side lines, and the game was on once more. As the Corbin had complained of bad skidding on the greasy turns during its wet trip, the officials decided to allow it another trial to equalize matters. But the Corbin stalled just beyond the Mountain House, and first place went to the Thomas-Detroit "40," driven by Oliver Light, with a mark in 2:19 1-5. "Suppose the Thomas-Detroit had done anything slower than 2:45 1-5, the Corbin's first time, who would have been awarded first

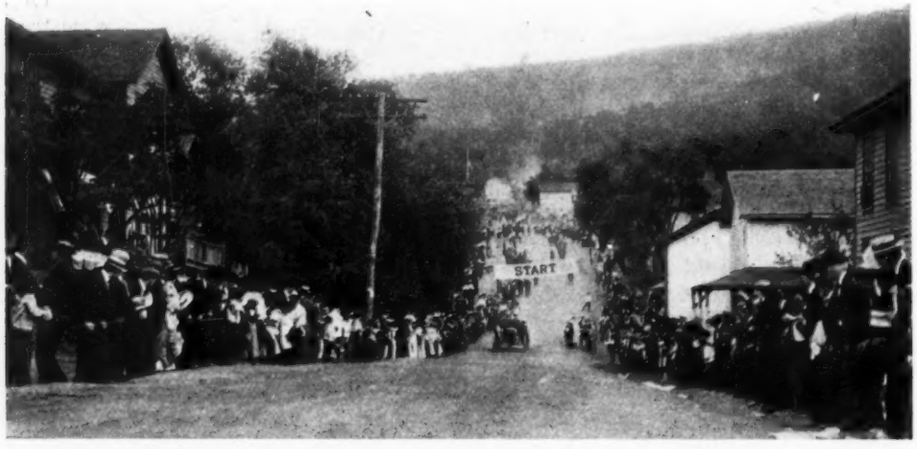
Stevens-Duryea Big Six Starting in the Free-for-All on "Giant's Despair."

prize," was a poser handed to an official. "Never cross a bridge until you come to it," was the reply.

A walk-over in the sixth event, for $3,001-to-$4,000 gasoline stock cars, was the luck of the Stevens-Duryea Little Six, driven by S. H. Hancock, who sent his car up the mountain in 2:17.

The seventh event witnessed still another walk-over, but it was due to the fact that H. N. Harding, entrant of the Matheson "50," protested his only competitor out of the race for not being equipped with a pan. Referee Morrell read the rules, and reluctantly ordered O. W. Hoffman to take his 30-60 Stearns back to the park. Hoffman said he removed his pan because it rattled, and not to save the trifle in weight. The conditions called for stock equipment, and Morrell could not but decide against the Stearns when the matter had been officially brought to his attention. After the dispute was settled, C. A. Nan jogged the Matheson up the hill in 3:14 2-5, thereby annexing the Wilkes-Barre "Record" trophy.

The real form of the big fellows was first shown in the eighth event, for six-cylinder gasoline stock cars selling for $2,500 or over. S. H. Hancock led off with the Stevens-Duryea Little Six in 2:08 1-5, and then all of a sudden the huge crowds were electrified by the announcement of a 1:52 flat trip by the Little Six's big brother, driven by P. J. Robinson, from the Chicopee Falls factory. This smashed the best previous gasoline record by over seven seconds. Willie Haupt followed in the Great Chadwick, but could do no better than 1:59 3-5, due mainly to a much-too-slow start. J. Deatrich finished up the event with a 2:38 1-5 journey in his Matheson, the big Stevens thus capturing the splendid Wilkes-Barre Automobile Club trophy. Robinson came as near as a hair to having a bad accident in this event. Finishing very fast, the crowd beyond the line had not realized how far he would be compelled to go before he could stop. His, it will be remembered, was the first really fast trip of the day. Dashing over the brow of the rise and down the slight decline, the people had to scatter like sheep, and quickly, too, to avoid a bad accident. Robinson worked at his brakes like a madman, and just managed to stop short of the bulk of the jammed-in crowd. It was certainly a close shave, and afterwards, with the assistance of a force of State constabulary, the course was kept clear for quite a distance beyond the finish line.



How the Course Was Kept Clear Up the Long Stretch of Wilkes-Barre Mountain.

The event of the day came next—the free-for-all. John Dower and his Model "M" Corbin opened proceedings with a trip in the modest time of 2:11 1-5. The big Stevens Six followed, with the 1:49, which broke the White course record by four-fifths of a second, which announcement woke the crowd to a realization of the possibilities. After the Thomas-Detroit had made the journey in 2:15, "Willie" Haupt got off to a start which opened the eyes of the onlookers. In the previous event he had been unable to attain sufficient speed at the getaway, and his pace when crossing the tape had been comparatively slow. But this time the car picked up beautifully, and by the time Starter Fred Brand's gun cracked, he was giving those at the start the best exhibition of speed they had seen during the day. Up the first thousand feet of 10 per cent. grade he flew on his second speed (2.6)—he afterward said he had not used his high except in practice—and, rounding the elbow, he threw in this third (3.9), which took hold beautifully without perceptibly lessening his speed, although he was now on a 16 per cent. rise. Without a change, but with his eyes glued to the course, and exerting all his strength to guide his car, he swung around the bad "S" at the Mountain House, and onto the stretch leading up to Prospect Rock, which he passed like a flash. Here he struck the foot of the long 20 per cent. pull to the top—a full 600 yards. But he knew his car and his gears after his toilsome practice of the previous days, and the big Chadwick mounted the stiff slope like a bird and flashed past the finish in 1:41 2-5. When the news of this performance was 'phoned to the start, the huge crowds gave vent to their pleasure in the characteristic American way—they shouted long and loud. The Chadwick was equipped with a full set of Continental tires.

Three additional cars tackled the job before the event was finished, but the glamour of the Chadwick's victory threw their otherwise creditable efforts into the shade. The twin Stanley "30's" both got under the two-minute mark — D. Walter Harper doing 1:59 3-5, and Fred Marriott, of straightaway mile-record fame, two seconds better—but the crowds were hungry for records, and nothing less would satisfy them.

For that reason the tenth event, open to stock chassis, with piston area not exceeding 103.87 inches, and for which Briarcliff models were eligible, fell a trifle flat. In some respects it was the best contest of the day, the cars being more evenly matched than in most of the other events. The fact that possession of one of the three legs of the crack bit of plunder in the prize line—the $1,000 Hollenback trophy—hung on the result of the race even failed to enthuse the crowds after the wonderful doings in the previous event. The Corbin, the Stevens Little Six and the Stearns all came close to the two-minute mark; the Pennsylvania Vanderbilt candidate, the Thomas-Detroit, and the Pennsylvania stock "50" did nearly as well, while the Matheson kept up the series of poor performances of the native car by a laggy 2:52. The Corbin won out in 2:02 2-5, the Stearns, with 2:04 3-5, nosing out the Little Six for the place by 1-5 of a second.

The crowd set up again when the announcement was 'phoned to the various stations that the Chadwick and a special Matheson would each make a record trial over the course. Haupt was first to face the starter. He asked for and obtained permission to take the Chadwick back of the railroad crossing a hundred yards or so to give the car a chance to gather speed before reaching the ribbon. The scheme worked to perfection, for, taking a terrific bumping as he crossed the double tracks, Haupt had the car at close to the top speed as Starter Brand gave him the gun. Out of sight up the mountain he whisked in a cloud of dust and gasoline vapor. At the successive stations—the Elbow, Mountain House, and finish—'Phoneman Cassidy got reports of his progress, and during the interval which elapsed before announcing the time, a strange stillness fell on the crowd. Although the spectators could not hear what Cassidy said to Announcer Lasher, it knew from his manner that the record had been beaten. "One thirty-eight and three-fifths!" thrilled through the 'phone, and the crowd signalized its appreciation of the unusual achievement in a manner which showed that they fully realized what climbing Giant's Despair in that time meant.

The Matheson's try resulted disastrously. It threw its left front tire on entering the Elbow and came within an ace of skinning off the outer layers of the ten-deep crowd on the inner side of the course. But Ward got his car under control in time to prevent trouble, and came dejectedly down the mountain with the inner tube spitefully slapping the road at each revolution.

The meet wound up with the event for the Quaker City Motor Club members, which was divided into three sections to give the various classes a chance to win. Fred Marriott again scored over his brother Stanleyite in the steam class—1:56 to 2:01 4-5. Bill Longstreth's Maxwell triumphed over "Tommy" Berher's Oldsmobile—2:49 4-5 to 3:14—in the $2,000-or-under gasoline class. Haupt tried to score again in the $2,001-or-more gasoline class, but his Chadwick was ditched when a tire went to the bad on the Devil's Elbow, giving Leonard Zengle a walk-over in his Pennsylvania "50," which reached the summit in 2:10 1-5.

While it is somewhat difficult to give comparative figures showing the improvement in time over last year, owing to the fact that the classes were differently arranged this year, the following will indicate a degree of betterment which argues well for the American manufacturer and the American driver:

Event.	1907.	1908.
Record trials	1:49 4-5	1:38 2-5
Free-for-all	1:59 2-5	1:41 2-5
Six-cylinder, $2,500 or over	2:02 2-5	1:52
Between $3,000 and $4,000	2:05 4-5	*2:17
Between $2,000 and $3,000	2:31 3-5	2:14 2-5
Under $1,000	**2:47	†3:19 2-5

*Walk-over. **22-horsepower Maxwell. †15-horsepower Ford.

Last year the Chadwick had marks of 2:02 2-5, 2:05 3-5 and 2:07; this year it registered 1:38 2-5, 1:41 2-5 and 1:59 3-5. Last year the Stoddard-Dayton made several trips around in 2:45; this year it won the $2,001-$3,000 class in 2:14 2-5, and carried an extra man. In almost every instance where comparisons can be made a marked improvement in time is noticeable, despite the fact that experts considered the course somewhat slower this year.

Many expressions of sympathy were heard for Walter White, and all expressed hopes for a speedy recovery from the effects of his recent accident and for another trial at the mountain next year.

Apropos of next year's climb, there was much discussion of the rumored movement to make the affair a national one by handing it over to the A. A. A. With a most liberal municipal government, which recognizes the value to the city of these annual gatherings and with an ideal course, ideally located, the national body might do worse than assume the management of what will be a sure winner and cannot fail to add to its prestige. Even now the event is considered the blue ribbon event in the hill-climbing line, in the East at least, and manufacturers cherish a win on the historic Wilkes-Barre mountain as they appreciate a victor on no other course. It is already in a measure a national fixture. "Why not," say the advocates of the scheme, "make it such in reality by passing it over to the A. A. A.? It would be like finding money." Why not? The summaries:

Time trials for course record (1:49 4-5, in 1907, held by White Steamer; 1:41 2-5, this meet, held by Great Chadwick).

1. Great Chadwick Six	50	W. Haupt	1:38 2-5
2. Matheson Six	50	C. A. Ward...Punctured tire.	

FREE-FOR-ALL, STRIPPED AND RACING CARS.

1. Great Chadwick Six	50	W. Haupt	1:41 2-5
2. Stevens-Duryea Big Six	50	P. J. Robinson	1:49
3. Stanley steamer	30	Fred Marriott	1:57 3-5
4. Stanley steamer	30	D. Walter Harper	1:59 3-5
5. Corbin	35	John Dower	2:11 1-5
6. Thomas-Detroit	40	Oliver Light	2:15
7. Matheson	60	C. A. Ward	2:18 3-5

GASOLINE STOCK CHASSES NOT EXCEEDING A TOTAL PISTON AREA OF 103.87 SQUARE INCHES.
(All Briarcliff models eligible.)

1. Corbin	35	John Dower	2:02 2-5
2. Stearns	30-60	O. W. Hoffman	2:04 3-5
3. Stevens-Duryea Little Six	35	S. H. Hancock	2:04 4-5
4. *Pennsylvania	50	Alfonso Gentile	2:13
5. Thomas-Detroit	40	Oliver Light	2:14
6. Pennsylvania	50	Leonard Zengle	2:17 1-5
7. Matheson	50	C. A. Ward	2:52

*Protested as ineligible, the car having been specially constructed for the Vanderbilt Cup race.

The Corbin That Won the Stock Chassis Trial.

SIX-CYLINDER STOCK CARS SELLING FOR $2,500 OR OVER.

1. Stevens-Duryea Big Six	50	P. J. Robinson	1:52
2. Great Chadwick Six	50	W. Haupt	1:59 3-5
3. Stevens-Duryea Little Six.	35	S. H. Hancock	2:08 1-5
4. Matheson	50	J. Deatrich	2:38 1-5

FOUR-CYLINDER STOCK CARS SELLING FOR $4,000 OR OVER.

1. Matheson	50	C. A. Ward	3:14 2-5

GASOLINE STOCK CARS SELLING FROM $3,001 TO $4,000.

1. Stevens-Duryea Little Six.	35	S. H. Hancock	2:17

STEAM OR GASOLINE STOCK CARS, $2,001 TO $3,000.

1. Thomas Detroit	40	Oliver Light	2:19 1-5
2. *Corbin	30	John Dower	2:45 1-5

*Allowed another trial owing to course having been set, and stalled at Mountain House.

GASOLINE STOCK CARS SELLING FROM $2,001 TO $3,000.

1. Stoddard-Dayton	45	W. Miller	2:14 2-5
2. Thomas Detroit	40	Oliver Light	2:18
3. Corbin	30	John Dower	2:24
4. Oldsmobile	40	T. W. Berger	2:30 2-5
5. Pennsylvania	50	Leonard Zengle	3:29 4-5

GASOLINE STOCK CARS SELLING FROM $1,251 TO $2,000.

1. Acme	28	E. Lengle	2:45 2-5
2. Rambler	30	A. H. Bitner	4:08 1-5
3. Oldsmobile	35	T. W. Berger	Stalled

GASOLINE STOCK CARS SELLING FROM $851 TO $1,250.

1. Mitchell	20	R. Jackson	4:02 3-5

GASOLINE STOCK CARS SELLING FOR $850 OR LESS.

1. Ford	15	A. A. Jones	3:19 3-5
2. Maxwell	14	C. Fleming	3:22 2-5

OPEN ONLY TO MEMBERS QUAKER CITY MOTOR CLUB.

Section 1.—For Steam Cars Only.

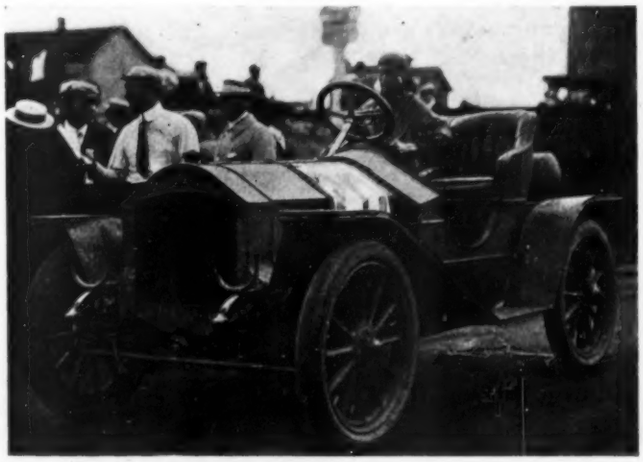
1. Stanley	30	Fred Marriott	1:56
2. Stanley	30	D. Walter Harper	2:01 4-5

Section 2.—For Gasoline Cars Costing $2,000 or Under.

1. Maxwell	24	W. C. Longstreth	2:49 4-5
2. Oldsmobile	35	T. W. Berger	3:14

Section 3.—For Gasoline Cars Costing $2,001 or More.

1. Pennsylvania	50	L. Zengle	2:10 1-5
2. Great Chadwick Six	50	W. Haupt	Ditched



One of the Pennsylvania Cars That Competed.

How Trucco Won the Targa Florio

Trucco in His Winning Isotta Rounding a Bad Turn.

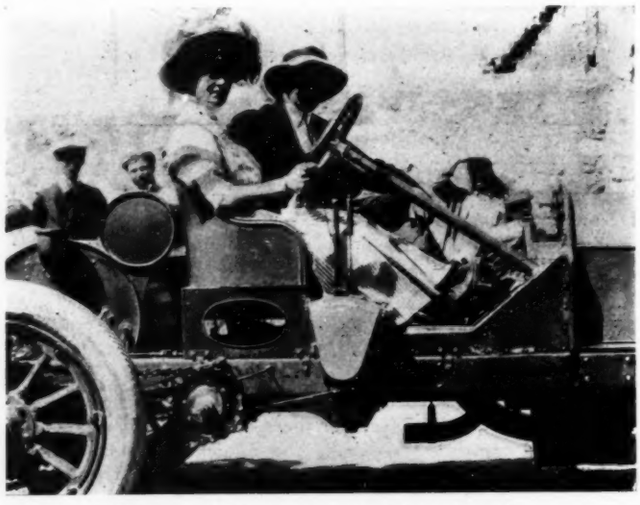
PALERMO, SICILY, May 20.—Trucco, on an Isotta Fraschini, has won the third annual Targa Florio, Europe's first big car race of the season; Lancia is the eternal second, and Nazzaro, for the first time, has been put out of the running by a sharp skid on one of the mountainous turns followed by the overturning and smashing of his car.

With the exception of a French Berliet, Italy had the 379-mile mountain race with its 1,432 sharp turns for each of the three rounds entirely to itself, French constructors preferring to reserve their forces for the series of 155-millimeter races opening with the Grand Prix. As an all-round testing ground of the value of a car, the Sicilian course selected by Vincenzo Florio for the race which he has originated and brought to such popularity is certainly the acme of perfection. The 93 miles of road start from the level of the sea, climb around a volcanic mountain, then descend again to the seashore, twisting and winding the whole time at the rate of 15 turns to the mile, giving one sharp swing every 117 yards. No wonder some of the drivers declared they felt seasick.

The Berliet on One of the Course's Tortuous Stretches.

Trucco, the winner, managed to cut 28 minutes off Nazzaro's last year's record, covering the three rounds in 7:49:25, being an average of 35.5 miles an hour. From beginning to end his 5.1 by 5.9 four-cylinder Isotta Fraschini ran without a stop or attention to its mechanism. It was not the same, however, for the tires, all four of which had to be changed by the winner at the beginning of the third round, owing to the terrible racking effect of the stony mountain road.

Lancia, who started first but finished second, 13 minutes 15 seconds behind the Isotta, really lost his race through bad luck with his tires. On the first round he was running practically dead heat with his companion, Nazzaro; at the end of the second lap he had got first, with Trucco a minute behind and Nazzaro three minutes in the rear. Then the ill luck came along as usual, and the big Italian had to close down his engine three times in succession to change tires. Even with dismountables the operation was not fast enough to catch the speedy and more fortunate Isotta, and Lancia, though the first to cross the finishing line, had again to be registered for second prize. There is perhaps a little satisfaction in having beaten Nazzaro's record by the ample margin of 15 minutes.



Signor and Signora Fraschini in the Isotta.

Ceirano, another son of Italy, took third place on an S. P. A., seven minutes behind Lancia. Porporata, handicapped on the Berliet by reason of his small power, was fourth place by sheer regularity of running, and fifth, sixth and seventh places were taken by Isotta Fraschini, Junior, and Itala, this last named firm taking part unofficially and having its car handled by an amateur.

The six to drop out in the terrible struggle comprised Nazzaro, disabled by reason of a serious skid; Raggio on the S. P. A., with broken valves; Venezia, on the same make of car with a broken wheel; Minoia, on Isotta Fraschini, as the result of a spill; a Zust and a Franco. The official classification is as follows:

1.	Isotta Fraschini, Trucco	7:49:25
2.	Fiat, Lancia	8:20:40
3.	S. P. A., Ceirano	8:90:13
4.	Berliet, Porporato	8:22:32
5.	Isotta Fraschini, Giovanzini	8:38:27
6.	Junior, Tamagni	9:56:08
7.	Itala, Pizzagalli	9:58:05

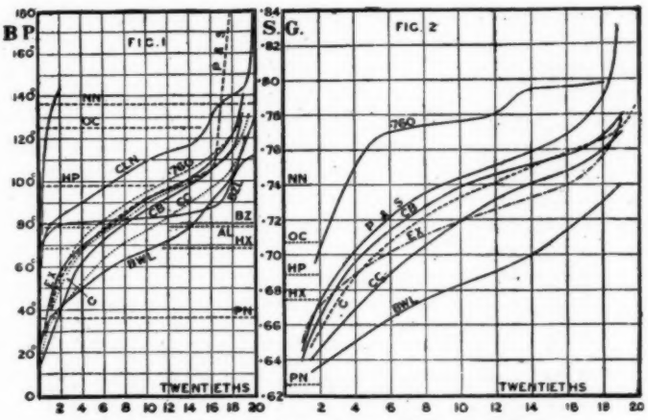
Winner's average, 35.5 miles an hour.
Previous record, Nazzaro, Fiat, 8:17:36.

Wagner, who was to have completed the Fiat team, was withdrawn, owing to his engagement in the St. Petersburg-Moscow race at the end of the month.

CONCERNING PETROL AND SOME PETROL TESTS*

By G. H. BAILLIE.

UNTIL 1906, fuel for motor cars seemed a comparatively unimportant subject. Good quality petrol could always be obtained at a reasonable figure, and its cost was much less than the cost of tires. Then came the period when petrol was very expensive, and though it is now cheaper, this period has left behind a certain apprehension that it may again reach famine prices. Then, too, commercial motors came to the fore, and in running these petrol forms a very important item in the costs. The result has been that more attention has been paid of late to the question



Results of Tests of Fuels by Fractional Distillation.

of fuel, and there are now on the market a variety of fuels, American petrol of heavier grades, Borneo .760 spirit of rather different constitution, mixtures of petrol with heavier oils, and various kinds of benzols.

It is easy enough to formulate what a good fuel should be.

1. It should enable the engine to start easily from cold.
2. It should not smell too bad before or after combustion.
3. It should run the car as many miles as possible to the shilling.
4. It should not lead to deposits in the cylinder or on the valves under any of the various conditions of running.

Conditions 1 and 2 do not require any special test to be formulated for them. Anyone can make both tests for themselves with an engine and a nose. Conditions 3 and 4 are not so easy to test. One may find that a new fuel does not run the car as many miles as does its accustomed fuel, but it does not follow in the least that the new fuel is not so good. Its specific gravity may be different, and require a different weight of float. Its viscosity may be greater, and require, therefore, a larger jet to give sufficient fuel. It may take a larger amount of air for combustion, and, finally, it may be less volatile, and may not be fully evaporated and utilized. The number of miles to be got out of a shilling's worth of fuel depends on three things: First, the price per gallon; secondly, the calorific value per gallon; thirdly, the extent to which the fuel is utilized.

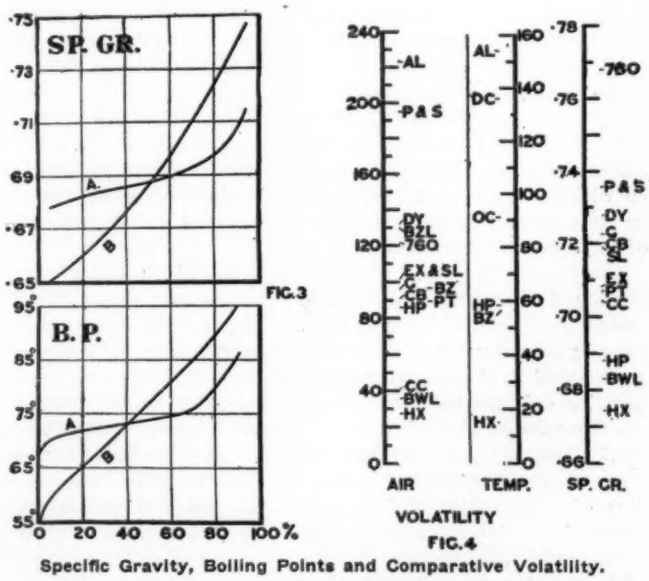
What I propose to discuss now is the extent to which the fuel can be utilized, and condition (4). These both amount to the same thing—the readiness with which the fuel evaporates, or its volatility. The ideal fuel would all vaporize in its passage along the induction pipe from jet to inlet valve. Probably no fuel does it. In an engine running at 600 r.p.m. the time of transit from jet to inlet valve is of the order of 1-100 second, depending, of course, on the diameter and length of the inlet pipe, while the whole time available before compression stroke is 1-20 second.

One hundredth of a second is a very short time in which to do much evaporation, and it is probable that a great deal of it is done in the cylinder itself, where the temperature is high. But any fuel reaching the cylinder in a liquid state is liable to give deposits. It it settles on a very hot part, such as the exhaust valve or piston head or any old deposit, or if any remains liquid when combustion takes place, the liquid "cracks" instead of evaporates, and gives rise to a tarry deposit which eventually carbonizes.

It is to get an idea of the quality of a petrol in this respect that hydrometers are used to test the specific gravity, and this specific gravity test has been the only one applied to petrols in practice. The specific gravity test, though, tells very little. Later I will give, as an example of how little it tells, a case which occurred in practice.

Another test is by fractional distillation, and is the only one which gives any real information. It is an indirect test, being really an analysis of the fuel. I have distilled in this way most of the fuels now on the market, and the results are shown in Figs. 1 and 2. Fig. 1 contains the boiling point curves, and Fig 2 the specific gravity curves.

In Fig. 1 the abscissæ represent percentages of the total volume of liquid distilled off, while the ordinates represent the temperatures at which the different portions boil. In Fig. 2 the ordinates represent the specific gravities of the different portions. Fig. 3 contains similar curves for two petrols, *A* and *B*, of which *A* was adopted for the *Circuit des Ardennes* last year. Petrol *A* is remarkably good, the specific gravity of the last tenth being only .715 and its *B.P.* only 85 degrees. The specific gravity of the whole petrol was .690. Petrol *B* had the same specific gravity, and so by the specific gravity test would be reckoned equally good, but the curves show that its composition is very different. The last tenth has a specific gravity of .747, and the mean specific gravity has been brought low by adding or



Specific Gravity, Boiling Points and Comparative Volatility.

retaining some very light spirit of .650 specific gravity. The ideal spirit would have a constant composition, with the same specific gravity and *B.P.* for all its fractions, and *A* approaches this very closely. Petrol *B*, on the contrary, is a mixture of heavy and light spirit, and, though a good spirit from the English point of view, was regarded as bad in the French book from which I took the curves.

In Figs. 1 and 2 are seven horizontal straight lines. These represent the curves for seven pure fuels—pentane, hexane, heptane, benzine, octane, nonane, and absolute or ethyl alcohol.

*Extract from paper read before the Royal Automobile Club, London, May 14, 1908. Petrol is the English term for gasoline, and paraffin coresponds to kerosene. The letters identifying the curves in Figs. 1, 2 and 5 refer to various brands of fuel on the English market. See Fig. 6.

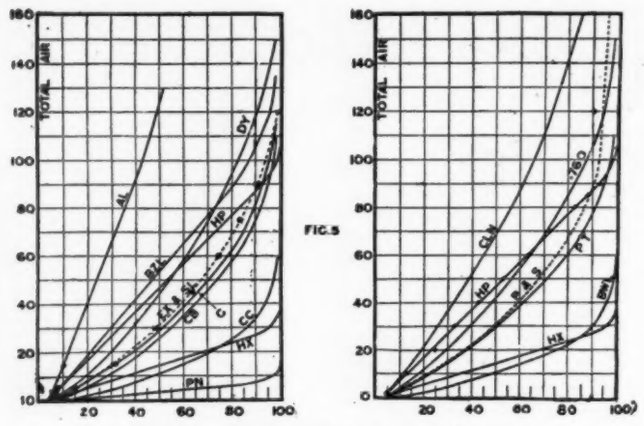


FIG. 5

Evaporation Curves Obtained by Experiment.

Hexane and heptane are the chief constitutents of petrol, and octane enters also to a greater or less extent into every petrol. The American petrols consist almost entirely of members of the paraffin or saturated series of hydro carbons. Table I gives the properties of the earlier members of this series:

TABLE I.—Properties of the Principal Constituents of Fuels.

	Formula	Density at 15 deg. C.	Boiling point	Lower calorific value per liter
Butane	C_4H_{10}	.600	1	—
Pentane, iso-	C_5H_{12}	.628	31	—
Pentane, normal	C_5H_{12}	.626	36	—
Hexane	C_6H_{14}	.674	68.5	7155
Hexahydrobenzine	C_6H_{12}	.760	69	—
Hexahydrotoluene	C_7H_{12}	.772	97	—
Heptane	C_7H_{16}	.688	98	7380
Octane	C_8H_{18}	.719	120	7560
Octane, normal	C_8H_{18}	.707	125	—
Nonane, a	C_9H_{20}	.740	136	7900
Nonane, normal	C_9H_{20}	.722	150	—
Decane	$C_{10}H_{22}$	.738	160	8060
Benzene	C_6H_6	.884	80.4	9690
Toluene	C_7H_8	.871	111.0	—
Ethyl alcohol	C_2H_6	.794	78.3	5270
Methyl alcohol	CH_4	.797	66.0	—

The petrol hydrocarbons are arranged in the order of their boiling points, and it may be noted that the densities and boiling points increase together only in one and the same series. Of the two naphthenes given, which are found in Eastern petroleums, hexahydrobenzine has the same boiling point as hexane, but a density of .760 instead of .674, and hexahydrotoluene, with the same boiling point as heptane, has a density of .772, while that of heptane is .688. The density therefore forms no ground on which to condemn a fuel. Industrial alcohol is composed of 90 per cent. of ethyl alcohol (with some water) and 10 per cent. of methyl alcohol or wood spirit.

The hexane, heptane, and octane lines on Fig. 1 and 2 show roughly the composition of the different fuels represented by the curves. They show it roughly only, because certain fuels contain other hydrocarbons than those of the paraffin series. Paraffin is represented by the extreme right-hand curve in Fig. 1, this curve showing only the lightest fractions. I might here call attention to the confusion that often arises between "benzene" and "benzine." Benzene is a definite hydrocarbon, with formula C_6H_6, and is a coal-tar product. Benzine is a popular name for a certain class of spirits distilled from petroleum, and both names are frequently used for benzol or a mixture of benzene and other coal-tar spirits.

The petrol curves all show the presence of pentane, hexane, heptane and octane, or hydrocarbons of other series with corresponding boiling points. Several reach a higher boiling point than that of octane, and one, the mixture of petrol and shale oil, contains a thick dark brown residue having a boiling point of 273 deg. Cent.

The first thing to find out is the minimum temperature at which it is possible for a fuel to exist as vapor under normal atmospheric pressure. This is obtained from the vapor-tension curve of the fuel, which is a curve giving the minimum temperature at which the vapor has a certain pressure. As it has been found that the best results are obtained in an engine when the mixture contains about 30 per cent. more air than the quantity theoretically sufficient to completely burn the fuel, I have worked out the results for four mixtures—that containing the right amount of air theoretically, and those with 20 per cent. less, 20 per cent. more, and 40 per cent. more air. The figures are given in Table II.

TABLE II.—Minimum Temperatures at which Fuel Exists as Vapor.

Air	20 per cent. less	Right amount	20 per cent. more	40 per cent. more
Hexane	-14.2	-17.7	-20.6	-24.2
Heptane	7.3	3.6	0.7	2.0
Octane	22.9	19.0	16.0	13.0
Decane	46.1	42.0	39.0	36.5
Benzene	- 0.7	-4.3	-6.9	-8.3
Ethyl alcohol	26.5	23.3	20.7	17.8

From this it appears that octane, decane and alcohol cannot exist as vapor under ordinary atmospheric conditions except in very weak mixtures. The large difference between benzene and alcohol accounts for some of the difficulty in using the latter as compared with the former in an engine.

But if these fuels were mixed with the air in the form of liquid at these temperatures, they would not vaporize completely, for in evaporating they reduce the temperature. The fall in temperature due to evaporation can be calculated from the latent heats of the fuel and the specific heat of the air. Table III gives the drop in temperature for the same fuels.

TABLE III.—Drop in Temperature due to Evaporation.

Air	20 per cent. less	Right amount	20 per cent. more	40 per cent. more
Hexane	23.3	19.0	16.3	14.2
Heptane	22.4	17.9	15.0	12.8
Octane	21.5	17.2	14.3	12.3
Decane	18.5	14.8	12.4	10.6
Benzene	47.3	32.2	23.5	20.9
Ethyl alcohol	95.5	76.3	63.7	54.6

Here, again, alcohol in evaporating lowers the temperature twice as much as benzene does. Benzene, too, which, according to Table II, can vaporize at about the same temperature as heptane, produces twice as big a drop in temperature as heptane does.

If the figures in Tables II and III be added together the result gives the minimum temperature which the air must have before the fuel is evaporated in order to completely evaporate it. Table IV gives these temperatures.

TABLE IV.—Minimum Temperature of Air before Evaporation.

Air	20 per cent. less	Right amount	20 per cent. more	40 per cent. more
Hexane	9.1	1.3	- 4.3	- 10.0
Heptane	29.7	21.5	15.7	10.8
Octane	44.4	36.2	30.3	25.3
Decane	64.6	56.8	51.4	47.1
Benzene	46.6	27.9	16.6	12.6
Ethyl alcohol	122.0	99.6	84.4	72.4

With the right amount of air none of the fuels except hexane can be evaporated completely in a cold engine, while alcohol requires the air to be at the boiling point of water for complete evaporation. With 20 per cent. more air, heptane and benzene can be vaporized cold.

Another factor, however, enters into the question, and that is the rate of the evaporation. The time available is very short, and not nearly enough to evaporate the fuels at the minimum

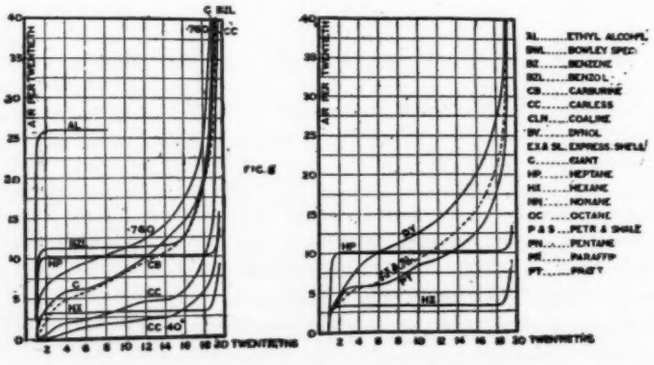


FIG. 6

Showing Comparative Volatility of Various Fuels.

temperature. The evaporation of liquid goes on at a slower and slower rate as the space into which it evaporates becomes filled with the vapor.

August's approximate law states that the time required for evaporation is proportional to $\log \frac{P}{P-p}$, where P is the maximum and p is the actual vapor pressure at the temperature in question.

The effect of the time required for evaporation can be estimated only by calculating from this expression the different temperatures which will cause the fuels to evaporate in the same time, and by arbitrarily assuming for one fuel, say, hexane, that a certain increase of temperature above the minimum is required to evaporate it sufficiently fast.

I have assumed that for hexane in a theoretically correct mixture the air should be at the normal temperature of 15 degrees Cent.—that is, that 13.7 degrees. must be added to the minimum temperature to evaporate the fuel quickly enough. On this basis I have calculated the additional temperatures to be added in the case of the other fuels to produce evaporation in the same time. Table V gives these temperatures added to those of Table IV.

TABLE V.—Temperatures before Evaporation to Cause Evaporation in the Same Time for each Fuel.

Air	20 per cent. less	Right amount	20 per cent. more	40 per cent. more
Hexane	26.8	15	6.6	-2.8
Heptane	71.4	58.4	48.7	40.2
Octane	104.6	91.4	81.0	72.4
Decane	149.3	136.0	126.4	118.4
Benzene	81.0	57.3	42.3	34.4
Ethyl alcohol....	181.9	154.3	135.4	120.3

The proportion of these temperatures which represents the time element is certainly somewhat arbitrary, but I think that the figures represent as closely as is possible on theoretical grounds the temperatures which would make the different fuels equally volatile under motor car conditions.

In Fig. 4 these fuels, with the right amount of air, are put on a scale of temperature, and since the more volatile the fuel is the lower is the temperature required for evaporation, the scale of temperature may be regarded to some extent as a scale of volatility, or rather a scale of non-volatility.

Why "Flooding" Is Usually Necessary to Start.

Heptane and benzene can, we know from experience, be used readily in engines, even starting from cold. But the temperature of 58 degrees required for their evaporation shows that they do not fully evaporate till the mixture comes in contact with the hot gases in the cylinder. In actual petrols there is always hexane present to facilitate starting, and the fact that it is so often necessary to flood the carbureter to obtain an abnormal quantity of petrol also shows that the evaporation of the heptane is far from complete when there are no hot gases to give the requisite temperature. Anyone who has used a surface carbureter of the old motor bicycle type knows what starting from cold on heptane is like; the "stale" petrol that these carbureters so often produced was simply petrol from which the lighter constituents had been evaporated off.

The benzols of commerce also have certain constitutents lighter than benzene, though only in small quantity; but apart from these, starting from cold is comparatively easy, because a much lower temperature is sufficient to give a weaker mixture, but one which will still fire readily. With benzine the temperature diminishes more rapidly as the mixture becomes weaker than it does with heptane, and benzene has the further advantage over heptane that a mixture with 100 per cent. more than the right amount of air is combustible, while heptane is not combustible with more than 75 per cent. more air.

Decane is the lightest constituent of paraffin which is present in any quantity, and from the table appears to be rather more volatile than alcohol. The temperatures of these fuels seem high, but when it is remembered that the residual gases in the cylinder are at 300 or 400 degrees Cent. their evaporation in a hot engine is explained. All the evaporation though must take place in the cylinder, and there is every chance for the formation of deposit.

Fig. 1 shows that benzene has a higher boiling point than alcohol, while Table V shows that it is far more volatile than alcohol under engine conditions. As we know from experience that it is far more volatile, we may perhaps conclude that the calculations leading up to Table V give a better idea of the volatility than do the boiling points. Unfortunately these calculations are applicable only to pure substances, not to our actual fuels, which are mixtures. A mixture of two hydrocarbons in a certain proportion gives off vapor which also contains the two hydrocarbons in a certain definite but a different proportion, there being more of the lighter constituent in the vapor than in the liquid, and the presence of the lighter constituent enables the heavier to evaporate more readily than it would if alone. A petrol, then, evaporates as a whole, heavier constituents evaporating more slowly than the lighter, but more quickly than they would if not mixed together. The volatility of these complex mixtures is therefore impossible to calculate, even if all the constituents are known, and it can be found only experimentally.

How the Evaporation Tests Were Made.

I have worked out a kind of surface carbureter to act as a testing apparatus measuring the volatility of the fuel. The apparatus consists of a graduated tube terminating below in a stopcock and above in a large bulb, with an opening to the air. Near the bottom of the tube a side tube is introduced and is connected to a foot-bellows. The tube is filled with the fuel to be tested, the quantity being read on the scale. The bellows is then worked steadily, each stroke driving the fuel into the bulb and thoroughly mixing it with the air. The opening from the bulb is so protected that none of the fuel is carried off mechanically with the air. After, say, ten strokes the height of the fuel is read off, the scale indicating how much has been evaporated. After another ten strokes the loss is again ascertained, and so on, till the whole of the petrol is evaporated. The petrol tube is surrounded by a water bath, so as to maintain the temperature constant.

Fig. 5 shows the curves obtained from this apparatus for all the fuels I could get hold of. The abscissæ represent the percentage of fuel evaporated and the ordinates represent the number of strokes of the bellows, or, what amounts to the same thing, the amount of air blown through the petrol. All the points coincide within the limits of accuracy of the method. Above these come the .760 Spirit, and above this Dynol. In the mixture of petrol and shale oil, the petrol and the shale oil seem to evaporate one after the other. Up to 85 per cent. the curve is much the same as the ordinary petrol, then the shale oil begins to show, and no amount of blowing would get off the last 5 per cent.

Fig. 6 is a series of curves derived from the curves of Fig. 5. The abscissæ are successive twentieths of the total volume, and the ordinates are the strokes of the bellows, or quantity of air required to evaporate each successive twentieth—not, as in Fig. 5, the quantity of air required to evaporate all the volume up to the twentieth considered. The ordinates therefore represent, one may say, the volatility of each twentieth of the fuel; the fuel being less volatile the higher the ordinate. In Fig. 6, therefore, the pure fuels are horizontal straight lines, showing constant volatility throughout, and the curves have the same characteristics as the boiling-point curves of Fig. 1. Benzol and heptane have much the same volatility, alcohol being far less volatile. Of course, the amount of air for evaporation cannot be regarded as a *measure* of the quality of a fuel. In the case of a new fuel being put on the market the evaporation test would enable the volatility to be compared with that of the older petrols of known properties, and a value could be got at once placed on it in this respect. If the test should turn out to be of any practical service different apparatus could be standardized by making an evaporation test of heptane, which can be procured cheaply in a fairly pure state, and by thus establishing a coefficient belonging to each apparatus the readings of different apparatus could be made comparable.

SIMPLIFYING TRANSMISSION OF POWER ON AN AUTO

By L. M. DIETRICH, Member Society of Automobile Engineers.

NOTHING short of a ponderous volume would begin to suffice to record half the attempts that have been made in the past few years to simplify the method of transmitting the power from the motor to the rear wheels in an automobile. From them all current practice may be said to have settled down upon a system employing a clutch, a change-speed gear, countershaft and chains, or propeller shaft and bevel gear drive at the rear axle. To reduce the number of these essentials and to simplify the

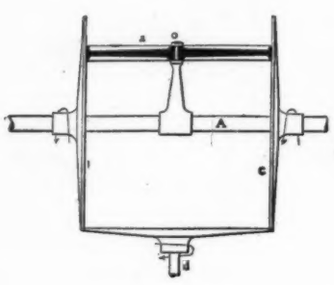


Fig. 1.

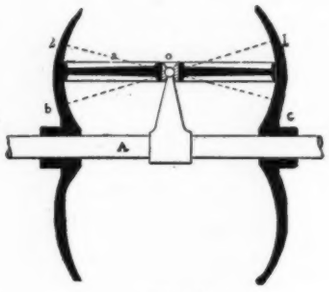


Fig. 2.

Illustrating the floating disc principle and its action.

resultant device has been the aim of countless inventors, but the majority of devices brought forth for the purpose have seldom been worth a second thought, while many involved more complication than they did away with.

The Dietrich Universal Drive axle, which is the invention of L. M. Dietrich, 2507 East Twelfth street, Kansas City, Mo., is quite an exception to the usual attempt along this line and is well worthy of attention. As its name indicates, it is designed to embody all of the essentials in question in a single unit and its range of movement is not confined to a certain definite number of steps, as is the case with the sliding gear, for instance. The basic principle on which it works is neither new nor revolutionary, but the inventor has evolved a plan for applying it to the needs of the purpose in view that is essentially different and that has been very carefully worked out. Before describing the device itself, its principle may be made clear by the small cuts.

Fig. 1 shows a driving device of three discs or bevel gears. *b*, *c* and *d*, *d* being the driver from the motor or other source of power. This will drive discs *b* and *c* in opposite directions.

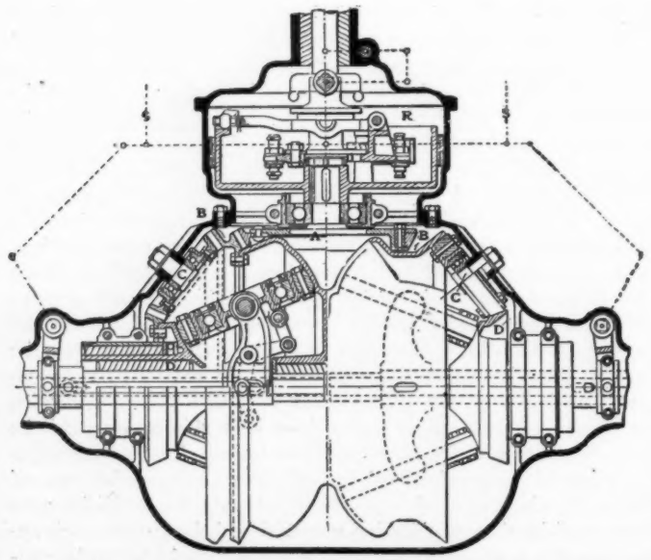


Fig. 3—Dietrich universal automobile driving axle.

Shaft *A* is loose in the bearings of the side discs, and the wheel *a*, turning on *o* of the support on *A*, simply revolves on the support and imparts no motion to the shaft as long as the two discs *b* and *c* turn at a uniform rate in opposite directions. If one disc is slowed down, the wheel *a* travels with the faster disc, and turns the shaft *A* just in proportion as the speeds of the two discs vary. But in the Dietrich drive both discs are driven positively by gears or friction, as desired. The change of speed is accomplished by making the driving discs concave and swinging the floating disc *a* on its center *o*, as shown in Fig. 2. With the disc *a* horizontal the shaft *A* receives no motion, but, swinging to either position shown, the shaft *A* turns in the direction of the disc on which *a* runs nearest the circumference. If it tips up to 1 it will run with that disc, and if to 2, it runs with the disc 2. This, then, gives both forward and reverse motions to *A*, or allows it to stand perfectly still if *a* is kept horizontal.

Following the application of this principle in the driving axle in Fig. 3, it will be seen that here the motor drives the gear *A* through the shaft from the motor. To reduce the length of the device the convex discs are not parallel, but angular, and the outer discs *D* are driven through the bevels *B* and *C* to get the right surface speed of both discs. All gears and floating discs run on Hess-Bright ball bearings, and the floating discs are controlled by the linkage system shown, a movement of the speed lever or pedal moving the floating disc into any position for forward or reverse or for stopping the car.

To do away with the differential there is a drive for each half of the axle, as shown in Fig. 3. The linkage system is connected to the speed pedal by the center rod and to the steering mechanism by the rods *S S*, so arranged that the turning of the steering wheel drives the wheels at the proper speed for turning the corner, and, unlike the differential gear, each wheel is driven positively whether on slippery pavements or in soft ground. There is also a simple device at *R* which takes care of different roads and grades when desired by acting through the same links to slow down or accelerate, as the case may be, and so utilize the full power of the motor or such portion of the power as desired at all times when nothing is in the way. The device is very simple and is intended to be used principally on motor trucks, with a constant-speed motor and the device set for, say, 10 miles an hour speed on the level. Then, on coming to a heavy grade the speed would come down to perhaps three miles an hour, but would return to 10 miles when the level was again reached, and no matter how much it slowed down, it would always climb the hill at some speed unless the wheels slipped.

The device depends on the friction of the floating disc and the driving discs on the side, but unless these surfaces slip they are positive as gears except, perhaps, for a slight creeping of the surfaces. Compressed cork has been chosen as the material for the bearing surface of the floating discs. Tests show that the dynamic coefficient of friction is 0.35 for cork on cast iron, as against 0.15 for steel on bronze, while for static friction this rises to 0.89 for polished cork against polished cast iron running in oil under a contact pressure of about 50 pounds. The elasticity of cork gives a surface contact instead of a line contact, as with a harder substance, and the fact that it holds well on cast iron and is not affected by oil is in its favor. Then, too, it will be seen that the peripheral speed of the floating disc is constant, regardless of the speed of the driven shaft, so that the driving power is not impaired by slowing down the surface speed.

Briefly stated, some of the advantages of the Dietrich Universal drive, as compared with both the usual type with clutch and sliding gear, and the friction type, claimed for it by its designer, are its unyielding power transmission up to the point of deformation of the material under low local duty. Noiselessness in operation and simplicity and cheapness of construction.

LETTERS INTERESTING AND INSTRUCTIVE

TIMING A MOTOR WITH WORN VALVES.

Editor THE AUTOMOBILE:

[1,390.]—I recently wrote the manufacturers about my four-cylinder car in regard to the timing. They advise me the engine is timed as follows: "Exhaust opens 5-8 inch before bottom center and closes top center. Intake opens top center and closes bottom center. Engine fires a little less than 3-16 inch past center of compression stroke."

I do not thoroughly understand the time given and shall appreciate your advising me if you can tell me how many degrees past center (flywheel measurement) the exhaust opens, also the number of degrees past center when the engine fires. I can readily understand it about the degrees, but not about the timing as given. The push rods and valve stems have been worn down some, but there is as much as a 1-8 inch difference between them; the former is 3-8 inch diameter, and the latter 5-16 inch. I understand they should be just barely separated. Can you advise me of a way to build them up? Under the circumstances the engine does not develop its full power. J. G. S.

Louisville, Ky.

It is customary to have the exhaust valve begin to open 30 to 35 degrees on the flywheel circle, in advance of the piston reaching the lower point of its stroke. The intake valve should not close at the bottom center, but should remain open until the piston has traveled slightly beyond on the up stroke in order to aspirate as full a charge as possible. This should be 10 to 15 degrees on the flywheel circle. The ignition should take place exactly at the upper dead center, or close of the compression stroke. The nearer this requirement is fulfilled, the greater will be the power of the motor, as it will then comply with Beau de Rochas' principle of firing the charge at the point of maximum compression. Lag of the various essentials of the ignition system is usually the cause of the ignition taking place late, though the amount you mention is, practically speaking, a negligible quantity where everyday service is concerned. Wear of the valve stems and tappets would be apt to bring about late opening and early closing of the valves, which would be detrimental to its efficiency. To correct such a condition, several expedients may be resorted to. Small pieces of rod of the same size may be welded on to the stems, and then ground down until exactly the right size is reached, or the end of the stems may be drilled and tapped and a piece screwed on to them.

DIFFERENCE BETWEEN AN H. T. AND AN L. T.

Editor THE AUTOMOBILE:

[1,391.]—Is there any difference between an H. T. and an L. T. magneto? About what voltage does a magneto give? What is gained by letting water drip on the exhaust pipe and having the air intake so arranged that it will draw in the steam. Could a single-unit coil and high-tension distributor be used with a storage battery? How is "prix," as in the Grand Prix race, pronounced? San Diego, Cal. H. B. P.

There is considerable difference between a high-tension and a low-tension magneto, particularly where what is known as the true high-tension type of magneto is concerned. On the armature of the latter, there is both a primary and a secondary winding, as in an induction coil. There is also a condenser to prevent sparking at the contact point, a contact maker, or timer, which runs synchronously with the motor, and a high-tension distributor, also running synchronously with the motor. Thus, the machine is a perfectly self-contained ignition outfit in itself, generating the current at low-tension, transforming it and distributing it. In the low-tension magneto there is only a single winding of heavy wire on the armature, and the current is utilized at the voltage at which it is generated. No transformer or high-tension distributer is thus necessary. The voltage of any generator depends upon its speed, but it is nothing uncommon for a magneto's e. m. f. to exceed 100 volts. Steam thus introduced has a cooling effect, but is little advantage.

"Prix" is pronounced as if spelled pree, the *x* being silent.

IS IT THE GEAR-SET OR THE MOTOR?

Editor THE AUTOMOBILE:

[1,392.]—I have a double-opposed engine in my automobile with planetary transmission, two speeds forward and reverse. The low speed for some time has been very much slower than originally, the present gait being hardly one-half of what was formerly developed; it is so slow that unless on a good smooth road it is hard to shift to high speed. Have tried different adjustments without improvement. Have run car with cover plate off of transmission to be sure the slow speed band don't slip; also examined pinion on shaft and find it tight. The planetary gears are in perfect condition. There is no friction in transmission. Can you offer any suggestions for remedying this trouble? S. F. ALSTON.

Tuscaloosa, Ala.

Are you not barking up the wrong tree in ascribing the fault to the gear-set? The fact that the low-speed members of the gear-set run very slowly, thus causing the car to do likewise, would not prevent you from shifting to the high if the motor is pulling all right, as it is easily possible to start small runabouts directly on the high speed by taking care in making the engagement, so that as long as the car is moving at all there should be no difficulty in making it pick up on the high speed. If your examination has satisfied you that there is nothing wrong with the gear-set, we think it is time that the motor were examined. None of the pinions in a planetary gear-set could become displaced without interfering with the others and making the fact very audible. You will probably find that the motor is not developing its rated output.

HOW MUCH WILL A PROPELLER PULL?

Editor THE AUTOMOBILE:

[1,393.]—How can you find what a fan will pull, that is, dead weight; its resistance in power of the following size: a wheel 6 feet in diameter with 24 blades, 6 inches at the outer end and 3 inches at the inner or near the center, and set to catch the air at 1 1-2-inch dip, running at a velocity of 100 revolutions per minute. Weight not to exceed 16 pounds? SUBSCRIBER.

Antwerp, O.

The only practical way of ascertaining this would be to build an experimental fan and try it on a spring scale. There is more or less data of recent origin on this, but we do not find it available at the moment, earlier data being all of a different nature, i.e., the volume of air that fans of certain dimensions will deliver. We think you have made a mistake in adopting such a number of vanes for the fan, or propeller, as the most successful types have but two or four blades. It is, however, necessary to run them at high speeds, and their efficiency would be practically nil at the speed you mention. Build an experimental four-bladed fan with the vanes so arranged that the pitch may be altered as desired, and run it from 1,000 to 1,500 r.p.m., registering the pull on a spring scale. The weight of the apparatus has no effect on its capacity, but it would be inconvenient to have a heavy propeller on an airship.

EXPLAINING A PUZZLING LOSS OF POWER.

Editor THE AUTOMOBILE:

[1,394.]—I have an Autocar runabout and last fall experienced considerable trouble with it, due, I think, to the carbureter. I could not start it until I put some gasoline in the cylinder, and after the engine started I would open the throttle and the motor would not speed up, it would make carbureter shots and sometimes would almost stop. I adjusted both the air and gasoline, but could not get it to run smooth. I had to run on intermediate gear most of the time, as I could not get power enough to drive it on direct; the coil seemed to be all right, as I could get a good spark on the plugs. Do you think I should change the carbureter? I have a Schebler Model D. The engine worked fine in the summer. I have recently ground the valves, overhauled it with the exception of cleaning the cylinders (by the way, it is a two-cylinder car), but it does not seem to have its old power, running good for a

quarter to half-mile, and then it makes muffler shots and slows down; then, after awhile, it will spurt up and run as before for quarter to half mile. Do you think the trouble is due to the carbon on piston, or is it the carbureter? M. ROBINSON.
Daretown, N. J.

We have known a case, exactly parallel to this, to have been caused by feeding an excess of lubricating oil. The car was an old one and the oiler had degenerated to a point where it no longer fed properly, the vibration causing it to empty very quickly at times. The engine was of the horizontal type and the excess oil worked its way into the combustion chamber and found its way to the spark plug points with the result that the motor acted in exactly the way you describe. Cleaning the cylinders out and regulating the oil supply may prove a remedy for your trouble as it did in the one in question.

ERRATIC ACTION AT SLOW MOTOR SPEEDS.

Editor THE AUTOMOBILE:

[1,395.]—I am having some trouble with my motor and would like your opinion as to the cause, and advice as to remedy. The machine runs beautifully, with plenty of power and speed, and with never a miss with the throttle well open, but when I try to run at slow speed it picks up slowly and fires back through the muffler, indicating that mixture is too weak; when I open the needle valve enough to remedy this, I get black smoke at muffler and missing when I open the throttle, and even then I get an occasional explosion through muffler. My diagnosis of the trouble is that the carbureter float is too low, but I do not want to change it until I am sure this is correct. S.
Alton, Ill.

Considered purely from the practical point of view and letting theory aside for the moment, there is not half as much real importance to be attached to the level of the float in the fuel chamber as many of the would-be experts would like to have one believe. Take practically any motor that is in fair running condition, and while it is under way shut off the gasoline. In nine cases out of ten, it will continue to run smoothly, and in fact, will run better toward the last on what fuel is in the float chamber, until the latter is practically exhausted, sometimes almost dry. If the float is about 1-16 inch below the level of the spray nozzzle in the carbureter of your car, we should not advise tampering with it. Some of the foreign cars have the stems of the float made so that there is a large range of adjustment for the height of the float, holes being drilled transversely through the stem in different directions, so that the float may be raised or lowered by small fractions of an inch, merely by drawing out and reinserting a small pin. But where the float has been placed anywhere below the level of the spray nozzle, as allowed by the adjustments, we have failed to find any difference in the motor's running regardless of the number of changes that were made one way or the other. In giving more gasoline, you doubtless went to the other extreme, as a very slight fraction of a turn of the needle valve will frequently make a very perceptible difference. With the motor running, shut the gasoline off at the needle valve very slowly, until the motor is just getting sufficient to run steadily without missing. To do this, it will be necessary to cut the supply down to the point where the motor actually does miss. Then open it again, equally slowly, until it will run steadily. The fact that there are explosions in the muffler at low speeds is equally indicative of the fact that the mixture may be too rich. See that the auxiliary air valve is working properly.

INQUIRIES ON A NUMBER OF TOPICS.

Editor THE AUTOMOBILE:

[1,396.]—I have a 24-horsepower, two-cylinder, double-opposed, four-cycle, water-cooled, long-stroke engine. Will a weak battery give as much power to the engine as a strong one, fuel being the same, as long as it doesn't misfire; and does a larger amount of lubricating oil tend to heat or cool cylinders (light-feed oilers)? With good care and a mileage of 1,000 miles per year, how long should the above type of engine give good service, subject to repairs as needed (four-passenger car)? Will the ignition system give an engine more power than batteries? Which is the best, high or low tension? I noticed the trouble of M. F. Parrish of Monroe, Ind., in your issue of April 9; he does not state whether the engine slows down and stops when he throws the friction wheel to the driver or not. I would like to hear from him again, as I have had similar troubles. C. A. GOODRICH.
Argentine, Kan.

The weak battery will cause the time of ignition to be delayed more or less, owing to the greater lag in the ignition system due to the failing strength of the current, but so long as the spark is sufficient to fire the motor regularly, experiments show that the difference in the power will be practically negligible. This is disputed by many authorities, but an exhaustive series of experiments carried out to determine just this question seemed to show pretty conclusively that so long as the spark was sufficient to fire the charge in good time, the heat or size of the latter made little perceptible difference. A larger amount of lubricating oil will tend to keep the cylinders cooler, provided the supply is not in excess of the needs of the moving parts, so that the oil is forced up into the combustion chamber, in which case it will carbonize and sooner or later caused premature firing. The magneto ignition system is generally conceded to be far superior to any using batteries and greater power and speed are obtainable from an engine thus equipped. We call Mr. Parrish's notice to your inquiry.

FIGURING RATIOS OF A FRICTION DRIVE.

Editor THE AUTOMOBILE:

[1,397.]—I wish to convert my car to a friction drive. It has a 12-horsepower engine, 28-inch wheels, sprocket on rear axle, 36 teeth; front sprocket on shaft, 9 teeth; weight of car, 1,500 pounds. What diameter shall I make the friction wheel and what should be the diameter and face of the wood fiber wheel to drive the car 25 miles an hour, the engine running 800 to 1,000 r.p.m. Will the car run just as easy with a larger sprocket on the shaft and a smaller wood fiber wheel? I would like the correct proportions for these wheels. J. H. KINDIG.
Huntington, Ind.

We should advise making the friction wheel 18 inches in diameter and the driven wheel 12 inches in diameter by 1 1-2 inch face. The width of the latter naturally determines the number of speeds available with a friction wheel of a certain diameter. We should also make the forward sprockets on the countershaft, 12 teeth, instead of 9, leaving the rear sprockets as they are. This will give a 3 to 1 reduction on the chains. Assuming a motor speed of 1,000 r.p.m., and with the driven wheel on the countershaft placed 3 inches from the center of the friction disc, the car should have a speed of 13 to 13 1-2 miles per hour; moving the driven wheel out to a point 6 inches from the center should double this speed, causing the car to travel a little over 27 miles an hour, which, with the necessary losses through slippage, not taken into account in the above, should give the desired speed of about 25 miles per hour. The car will run easier with the larger sprocket, but the driven friction wheel cannot be made small, as it would run too fast and would slip more.

ADVANTAGES OF TWIN-CYLINDER CASTINGS.

Editor THE AUTOMOBILE:

[1,398.]—I would like to ask a few questions concerning the construction of gasoline motors through "Letters Interesting and Instructive."

1. Why are there more four-cylinder engines (auto type) cast in pairs than separated? What are the advantages and disadvantages?

2. What advantage is claimed of a 3-bearing crankshaft (four-cylinder) over a 5-bearing type?

3. Are there any six-cylinder engines having cranks set at an angle of 60 degrees? M. H. MURPHY.
Powell, Texas.

1 and 2. The twin casting simplifies matters in a great many different ways, and accordingly reduces the cost of manufacture. There are only two castings to a motor, instead of four; with special machinery each pair of cylinders may be machined at once. It is easier to level and line up two large units on the crankcase than it is with four small ones. The engine as a whole may be made shorter and con-

sequently lighter. The three-bearing crankshaft is shorter, lighter and stronger for the same size motor; or, it may be made very much stronger by putting an extra amount of metal in the cheeks without increasing its weight beyond the point necessary in a five-bearing shaft. The expense of machining is considerably reduced in the three-bearing type; it is easier to align and the bearings themselves may be made larger. We do not know that it has any particular disadvantages not present in the five-bearing type.

3. We do not know of any, but if six-cylinder two-cycle engines were built this would be the logical crankshaft arrangement.

AN AUXILIARY AIR VALVE IS REQUIRED.

Editor THE AUTOMOBILE:

[1,399.]—I have a (mixer) carbureter that I think is a little out of order. When the car is standing, the engine will run slow and speeds up all right—appears to—but when the car is running and I open the throttle she does not respond, but will miss. Can you help me out? The mixer has no auxiliary air valve for high speeds. The engine also knocks some when I open the throttle on a hill. The bearings are all O. K.

Warren, Mass. LOWELL S. ELLIS.

Some means of supplying an additional quantity of air to compensate for the extra fuel drawn through the nozzle at higher motor speeds, is necessary in order to run a variable speed motor satisfactorily. Lack of this provision doubtless also accounts for the knock you speak of, as opening the throttle causes the mixer to supply a rich, slow-burning mixture which gives rise to considerable back pressure on the piston. That is, taking your assumption that the bearings are in good order, to be correct. An examination of the latter may reveal a condition that a casual inspection does not suffice to bring to light.

KNOCKING CAUSED BY SLOW-BURNING MIXTURE.

Editor THE AUTOMOBILE:

[1,400.]—I have a 1908 Ford, model S; the valves are clean, pistons have no carbon, and connecting rod is tight, yet there is a dull knock somewhere. I find that when the knock is most prominent, if I adjust the needle valve—sometimes giving it more gas, other times less—the knock ceases and the car runs all right. The carbureter is a Kingston. Will you also tell me where there is anything like a carbureter knock? I have often heard this question discussed, but have had all kinds of answers.

SUBSCRIBER.

The noise you mention is often traceable to an improper mixture, and the fact that you can remedy matters by adjusting the needle valve would seem to indicate that this is the case in the present instance. Unless the mixture be approximately correct, *i.e.*, neither too thin nor too rich, combustion is delayed, and in a high-speed motor such as the Ford the valves do not remain open long enough to permit the burning gases to completely escape. The consequence is, there is still considerable pressure remaining in the cylinder after the exhaust valve closes, and the piston has to work against it. Carbureter popping is common, but we have never heard of a "carbureter knock."

WILL A CRANKSHAFT STAND THIS STRAIN?

Editor THE AUTOMOBILE:

[1,401.]—Please inform me as to the relative strength or resisting power of a crankshaft, that is, which part is theoretically subjected to the greatest strain, and if theory and practice coincide? I want to know if the torsional strength of a crankshaft is great enough to allow of the cutting of a ball race on the mainshaft bearing, thereby reducing the diameter from, say, two inches to one and a half inches. Would it stand the strain?

Freehold, N. J. W. H. PORTENS.

We should regard adopting such an expedient as the practical equivalent of ruining the crankshaft, as it would not be likely to have sufficient capacity to stand the strain very long, particularly as the reduction you speak of amounts to fully 25 per cent. The stresses on a crankshaft naturally increase, in the multi-cylinder motor toward the flywheel end, reaching their summation at the point where the flywheel is attached.

FORMULÆ OF VARIOUS AUTO FUELS.

Editor THE AUTOMOBILE:

[1,402.]—Can you give me the formulas for alcohol, gasoline, benzol, benzine (if different than benzol), and kerosene? Will you also give me the formulas after each is mixed with air and burned when perfect combustion takes place? Or the formulas for each burning under atmospheric pressure? Also, if more perfect combustion could be gotten by having several pounds air pressure to mix with the vapor?

Have you the formula for the fuel oil used in large explosive engine and sold by Standard Oil? H. J. EATON.

Nyack, N. Y.

We regret that the inquiries contained in your letter involve a great deal more research to answer properly than we are able to devote to them. We would refer you to Clerk's and Sorel's works on the subject, the former being the English authority and the latter the French. It may be possible that some subscriber has this data in readily accessible form, and may be willing to supply it for the benefit of the inquirer. Nor do we know the S. O. product's formula, but think it is merely a low grade oil.

AVERAGE SPEEDS OF WINNERS IN BRIARCLIFF.

Editor THE AUTOMOBILE:

[1,403.]—Kindly answer this question in "Letters Interesting and Instructive": What was the average speed of the winning car in the Briarcliff race, not counting controls? Different accounts of the race put the speed at from 46 to 49 m. p. h.

Oakdale, L. I. H. T. CHITTENDEN.

Assuming the course to be 240 miles in length, not including the controls, the average speeds of the first seven to finish in the Briarcliff race were as given on page 598 of THE AUTOMOBILE of April 30. Strang's average, 46.15 miles per hour; Cedrino's, 44.44; Vaughan's Stearns, 43.95; Apperson, 42.24; Seymour's Simplex, 43.37, and Leland's Stearns, 42.85, the last two being unofficial, as the times were not recorded except unofficially. The Bianchi, the fifth car to finish officially, only averaged 40.40 miles per hour. On his best lap, Cedrino in the Fiat made the round at the rate of 49.25, the best Strang did being 47.30 miles per hour.

CHANGING FROM ELECTRIC TO GASOLINE.

Editor THE AUTOMOBILE:

[1,404.]—I wish to change power of my Waverley electric to gasoline motor, and am advised you will furnish me with the addresses of firms manufacturing motors. W. R. SANDERS.

Washington, D. C.

You will not find it advisable to make such a change as you propose, as it involves sufficient work to build a gasoline-driven car complete. Electrics are designed to run at slow speeds and they are very heavy for their size. They are made very high in order to permit of carrying the motors beneath the frame, and the wheelbase is very short—much too short for satisfactory service in a car capable of a speed of more than twenty miles an hour. You will find it much more economical to sell the electric car and invest in new materials. See our advertising columns.

AUTOIST'S EXPERIENCE WITH TIRE PROTECTORS.

Editor THE AUTOMOBILE:

[1,405.]—In reply to letter No. 1,352 concerning internal tire protectors, I will give my brief experience. A friend thought he had the tire bogie (?) beaten with just such a band as Mr. Eisemann speaks of—steel discs carefully imbedded in a canvas and rubber belt. I put them in the front wheels (36x3 1-2) with new Michelin shoes and tube that had not gone fifty miles, and had covered about thirty miles when a tire blew out. When I examined it I found a slit wide enough for two fingers and one of the discs protruding. On removing the tube I found many of the discs had chopped out of the belt, and it would have been only a question of a few more miles before the whole tube would have been in shreds. I removed the other tube. It was in pretty bad shape, but not quite as far gone. The "protectors" had been carefully made and carefully inserted, so there were no rough edges to catch, but the action of the wheels had been too much for the tire protectors. The tubes were beyond repair.

H. C. CRESLY.

REEVES FINDS INDUSTRY IN EXCELLENT CONDITION

FULL time in almost all the factories and in many cases night work in special departments of some 25 factories in the West, is the news supplied by Alfred Reeves, general manager of the American Motor Car Manufacturers' Association, following a two-weeks' visit to Western automobile cities.

"While one likes to view his own industry with eyes of optimism, my view of the Western situation was entirely without prejudice," says Mr. Reeves. "It is difficult for the average man to believe that the automobile business is in such splendid shape, whereas other lines of trade show a marked falling off. It indicates beyond argument the fact that the motor vehicle of to-day, while a luxury for a few, is a necessity for the many.

"At Newark, N. Y., the Mora people are in their new factory and working the full force turning out Mora cars. They have entered a car for the Vanderbilt Cup race. At Rochester, the Gearless people are working on a new 24-horsepower car of the small type to go with their 'Big Six' that was made famous by its work in escorting the round-the-world racers. At Buffalo both the Thomas and Pierce factories are keeping up with their reputation for building excellent cars of the larger type. Buffalo with its big club, is a veritable paradise for autoists. As an indication, I am told that the Rochester club will send 100 cars carrying members to the A. A. A. National Good Roads and Legislative Convention.

"No one denies that Michigan is the father State of automobile manufacture, and Detroit the 'Queen City.' The makers there report Eastern trade to have been a little slack for a couple of months during the Winter, but now coming with a rush. The trade in the West has been good for the past year. It is worth noting that in proportion to population, Iowa has led all other States in the purchase of automobiles during the past three months, according to the books of many makers. The Motorcar Company is working until 10 o'clock at night, turning out the friction-drive Cartercar. The Brush runabout people have their new models well under way and are shipping $500 single-cylinder wagons every day. The Aerocar people are making big plans for 1909, and so are the DeLuxe. I enjoyed seeing the last 1908 Packard driven through the streets of Detroit.

"As might be expected, the Ford plant is a veritable beehive, turning out runabouts and the new 20-horsepower touring cars, which, by the way, will have the steering wheel on the left-hand side. It is a wonderful production and in keeping with the reputation of Henry Ford. The Wayne people are making great plans for next year, and I was told there were plans for a consolidation of the Northern and Wayne plants, with W. E. Metzger as sales manager. The Cadillac company continues to find an excellent market for their single-cylinder car, while the Thomas-Detroit Company are finding difficulty in getting out enough of their cars to satisfy agents. Messrs. Chalmers, Coffin and Chapin showed me a new 24-horsepower car which they are getting under way very rapidly and it should be a great seller.

"At Jackson, Mich., the makers of the Jackson car have gone into a factory double the size of their old one; they have erected another factory for motors and also a drop-forging plant.

"No one denies that the Reo proposition is a leader in the automobile trade, and the factory at Lansing is the wonder of all who visit that city. While I expected a good deal, I was not prepared for the changes that have been made during the past six months. About 900 men are being worked, and Messrs. Olds and Peer opened the books and showed me where 803 Reos had been shipped in April.

"Another one of the regular manufacturers that is turning out cars in large quantities is the Maxwell-Briscoe Motor Company, whose big plant in Newcastle, Ind., is now in full swing. The greatest difficulty in Newcastle has been to build homes enough for the workmen who came there for the new enterprise. At Anderson, Mr. Louderback told me they were 168 cars behind in orders for the Lambert friction-drive machine.

"Indianapolis is another leading city for automobile manufacture. The American will continue their underslung racy runabout, while the Marion is devoting its factory to a similar type of car. The Nordyke & Marmon company are meeting with great success in their new air-cooled machine, and Howard Marmon, the designer, told me of some sensational plans for next year. The National as one of the leaders in the big car trade, has had its usual steady business, and so has the Premier. Its work laying out the Glidden tour has brought a lot of attention to the Premier car, and on Monday last they began another test that should attract a lot of attention. It is an attempt to travel a century a day for 100 days, or 10,000 miles in all, to prove the reliability of the auto and its low cost of upkeep. The Overland people have outgrown their factory and are assembling cars and doing a lot of general work in circus tents.

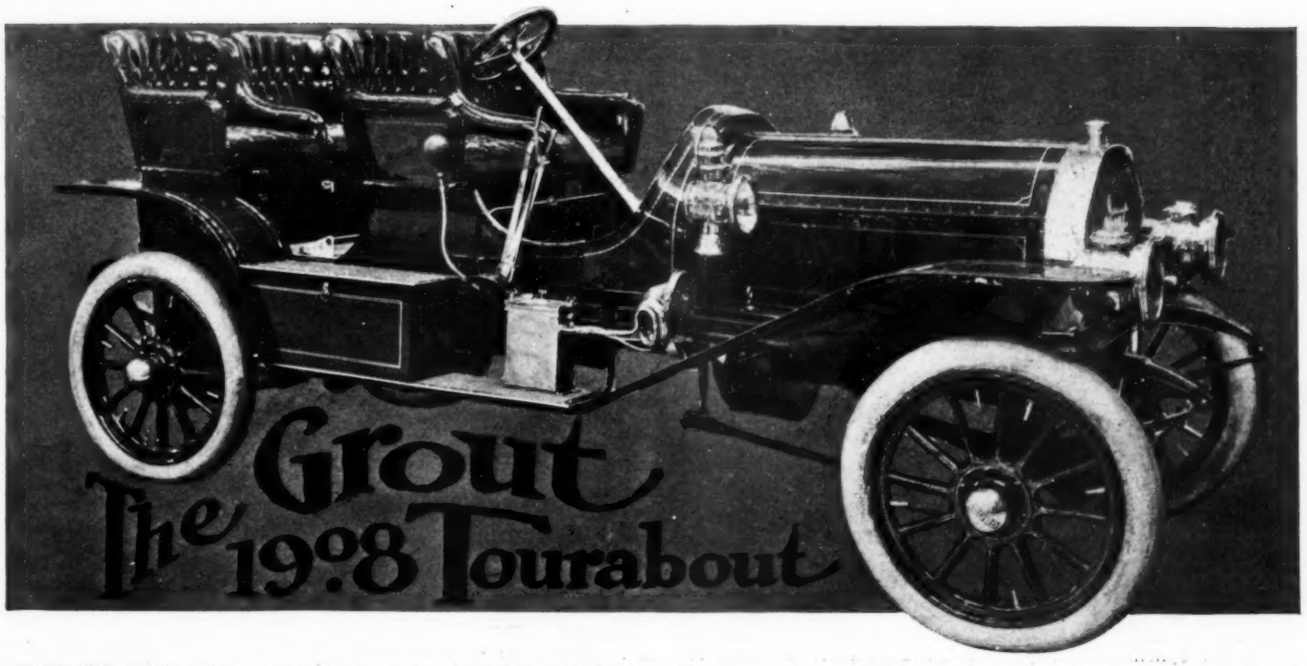
"At Pontiac, Mich., the Rapid Motor Vehicle Company have been snowed under with orders for commercial cars. They are the acknowledged leaders in commercial car manufacture, their products being on the streets of almost every prominent city. The Welch Brothers, notwithstanding the rushing orders of agents, are turning out their cars just as carefully as ever. They are built like a watch. I do not know of any factory in the West where more care is given to each car than in the production of the Welch. A. P. Brush, the designer of the Cadillac, is now at Pontiac, associated with Edward M. Murphy, in the Oakland Motor Car Company, producing a car with two vertical cylinders. The unique method of balancing the motor makes it run almost as smooth as any four-cylinder."

AS BRISCOE LOOKS AT THE TREND OF DEMAND AND MAKING

"WITH the season of 1908 began what Darwin would characterize the process of 'reversion to type' in automobiles—to lower powered cars," says Benj. Briscoe. "The fad for excessive power has about run its course, and I believe we have seen the last of the road-racing monster. If other signs were lacking, the mere fact that practically every maker of moderate powered cars is oversold would prove this contention. For our own part we won't have a car left in four weeks from to-day, notwithstanding we built 50 per cent. more Maxwells this year than ever before.

"And it isn't all a matter of price either. I can't see that the recent business depression has had any serious effect on the trade; of course many makers reduced their output in the early days of the panic, but even had they built as many as they originally planned, they still would have sold all they made of moderate-priced cars. Fact is it took a few years to demonstrate to users that the first cost of a car is not the chief item.

"While the user has been learning his lesson in maintenance cost, designers have been refining and simplifying till the 24-horsepower car of to-day is more efficient than the 60 of two years ago. Of course, being less than half the weight—one-third in many cases—it is more economical of fuel, tires and up-keep generally. In the 60-horsepower roadster type of car we have seen high tide in the craze for power and speed. The ebb has now set in and there will be a steady return to sanity, to moderate-powered, light-weight, low-priced cars capable of lawful (which is to say enjoyable) speeds, and evidences of the general trend are to be seen on every hand at the present moment.



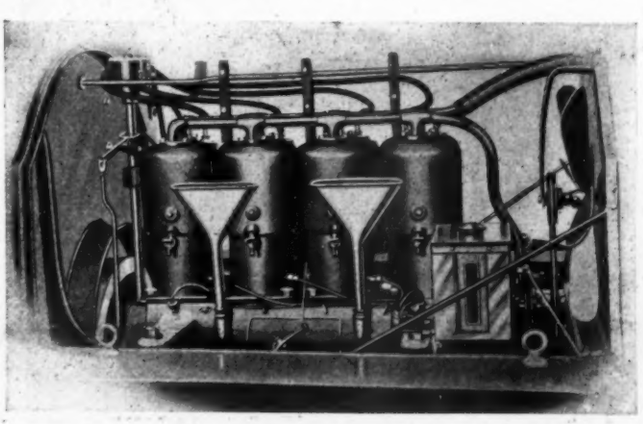
CONSISTENT adherence to features that have been tried out in past models of the same car, rather than radical departures of any nature, characterize the Grout for 1908. The makers—the Grout Automobile Company, Orange, Mass.—have not as yet gone in for building their own motors, but still stick to the Rutenber. This is a four-cylinder, four-cycle type, the dimensions of which are 4 1-2-inch bore by 5-inch stroke, and it is designed to develop its rated output of 35-horsepower at a moderate normal speed. It has given such satisfactory service in the Grout cars turned out in the past that the makers have found no occasion to change. The cylinders are independently cast units with the valve chambers on the left hand side, the inlet and exhaust manifold folds being held in place by common yokes, thus making them easily detachable. The use of separtely cast cylinders calls for a five-bearing crank-shaft and the builders of the motor have made unusually liberal provision in this respect, the five bearings totaling 11 inches.

The connecting rods are of the marine type and are made of one-piece drop-forgings of open hearth steel, while the piston pins are also of a special grade of steel and are made of large diameter. The valves are likewise one-piece drop-forgings, while the valve lifts are made adjustable and interchangeable. Drop-forgings are also employed for the timing gears, which are completely enclosed in the aluminum alloy crankcase and run in oil constantly, thus tending to make the motor very silent-running. The cams are made integral with the camshaft and are ground accurately to contour. The pump is of the standard gear type, and is made entirely of bronze, with the exception of the shafts, which are of steel. Every part of the motor is made interchangeable to facilitate replacements and particular attention has been paid to simplifying it to a point where no great amount of experience is required to dismantle or reassemble its working parts. An instance of this is to be found in the manifolds, mention of which has already been made. Both the inlet and exhaust piping can be entirely removed by loosening four nuts, the motor being distinguished in this respect by a construction which entirely eliminates the use of gaskets in the joints between the piping and the cylinders.

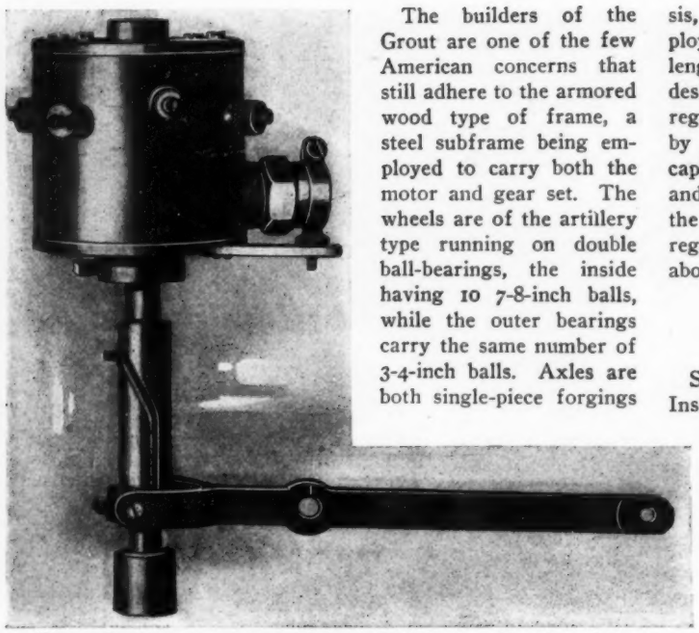
The synchronous type of high-tension ignition is employed, using a single induction coil mounted on the dash. This simplifies this extremely important essential of the motor to a very great extent, there being but a single coil and vibrator to adjust; while once running satisfactorily, the intensity and timing of the spark are exactly the same in the case of each one of the cylinders. The distributer employed for effecting this is a special type, exclusive with these makers, and consists of a timing device supported at each end by a bronze cap forming a bearing at the top and bottom for the central shaft. There are no frictional surfaces in the secondary member of the distributer, thus eliminating the creation of fine particles of metal, which cause trouble by sticking to the surfaces between the connections and cause short circuits. The entire distributer remains stationary, so that all the wiring is firmly fastened in place, avoiding the tendency to derangement caused by the constant movement of the timer to advance or retard the occurrence of the spark. This is avoided by accomplishing the spark advance through the medium of a sleeve with a spiral slot cut in it and which advances the shaft in the timer ahead of the driving shaft.

It has been developed to a point where it has been found that the motor can be run satisfactorily for long distances without the coil vibrator needing adjustment, and without suffering any damage in the way of burning at the contact points. A much greater mileage is also possible with a single charge of battery.

The essential of lubrication is taken care of by a force-feed oiler located under the bonnet on the right-hand side of the motor and forward, where the oil is kept at a uniform temperature when running. This is an advantage, particularly in cold weather, and it is a feature the adoption of which has been noticeable on a great many of the best-known American cars during the past few years, it no longer being the policy of the best designers to encumber the dash with fittings that are not absolutely needed there.



Showing Crankcase Breathers and Oiler, Grout Motor.



Grout Synchronous High Tension Distributor Showing Advance.

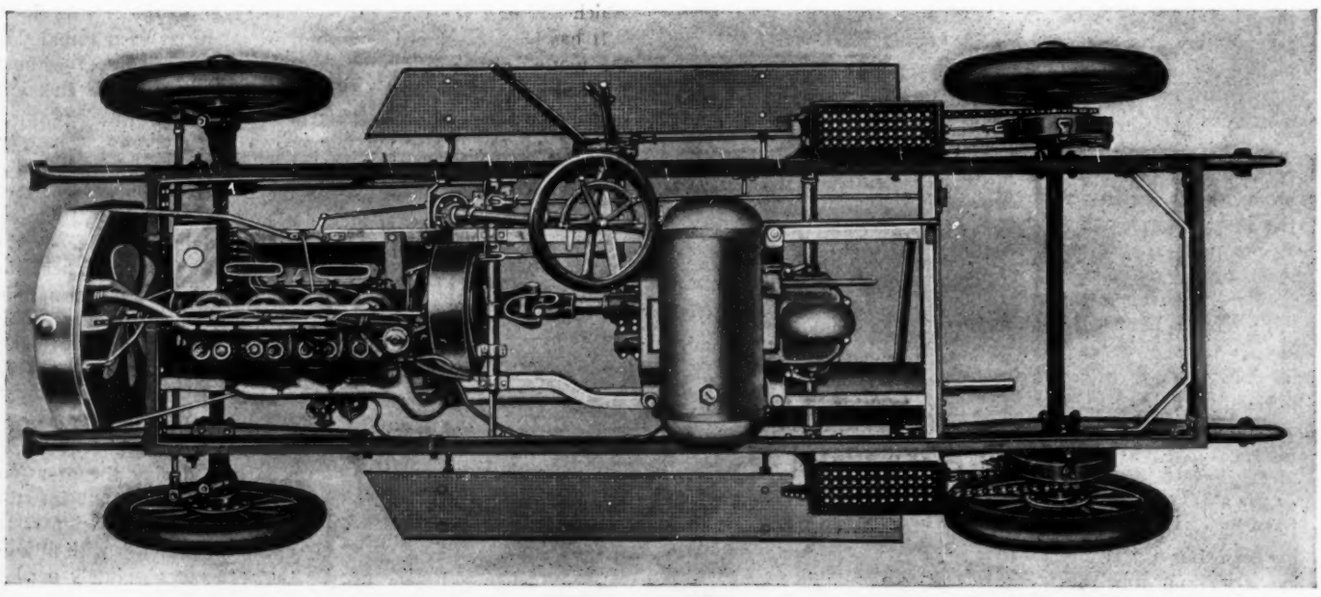
The builders of the Grout are one of the few American concerns that still adhere to the armored wood type of frame, a steel subframe being employed to carry both the motor and gear set. The wheels are of the artillery type running on double ball-bearings, the inside having 10 7-8-inch balls, while the outer bearings carry the same number of 3-4-inch balls. Axles are both single-piece forgings of chrome nickel steel, the drive being by means of countershaft and double chain, the Whitney detachable type of chains being employed. These chains may be taken apart without any difficulty at any link in their length and thus make adjustments very easy. A Panhard type of leather-faced cone clutch is employed in connection with a sliding change speed gear-set, operating on the selective plan and giving three speeds forward. Suspension is by means of the standard form of semi-elliptic springs both front and rear, and the latter are provided with side clips.

For steering, a gear of the worm type is employed, the wheel being a one-piece bronze spider, on which is mounted the wood rim. Spring connections are provided to take up all shock and jar in the steering gear and provision is made for adjustment in the shape of cone bolts used in the connections, so that any back can be immediately corrected. The wheelbase is 115 inches and the tire equipment is of the clincher type, purchasers being given an option on any standard make of tires. As will be apparent from the accompanying illustration of the complete chassis, a seamless pressed steel tank of cylindrical section is employed as a fuel container. This is mounted about midway the length of the chassis so as to come under the front seats and is designed to feed to the carbureter by gravity, its location with regard to the latter being such that the feed is not disturbed by any angle which the car can assume on a grade. It has a capacity of 14 gallons. Control is by means of the usual spark and throttle levers mounted on a stationary sector placed over the steering wheel. Two models are being listed for 1908, the regulation Grout touring car and the Grout four-seated tourabout, an illustration of which is given here.

FRONT DRIVING OF AUTOMOBILES.

Several interesting papers have been read recently before the Institution of Mechanical Engineers (London) on the subject of front driving as applied to electric, steam and petrol vehicles. The main advantage of the front-wheel drive undoubtedly exists in the fact that the dangers of side-slip are reduced to a minimum. A long, narrow, rectangular block of metal, when moved over a raised surface by imposing a single force pushing at its back, is quite uncontrollable as regards the direction it takes. In this case the surface, reacting on the imposed force frictionally, has a greater effect upon the movements of the metal block than the applied force itself. In short, by applying power to the back of the block, behind the center of gravity, the movements of the block must be erratic. On the contrary, if the block of metal be pulled from the front over the same surface, a straight course is perfectly feasible. In dealing with sharp turns there is not much to choose between pulling and pushing. There is no doubt, however, that for traffic purposes, the front-driven car is much to be commended. Corners are not taken at high speeds in towns, and in every other respect the stability of this type of car on the most greasy surface is unquestionable.

Dr. Hele-Shaw related some very interesting facts dealing with experiments which had been carried out by the Kriéger Company at their garage in Gillingham street. It appears that a surface composed of soft soap was prepared, and two electric cars, front and rear driven, were tested on this surface, proving beyond question that the non-skidding properties of the front-driven type were extraordinary. Granted an efficient transmission and correct distribution of weight, the front drive, as applied to public service vehicles, should meet with undoubted success on pleasure vehicles, as well as for commercial use.



Plan View of Grout Chassis for 1908, Illustrating Convenient Arrangement of Essentials.

Veteran Duryea's Latest Type of Buggy Auto.

DETAILS OF NEW DURYEA "BUGGYAUT."

After seventeen years' experience in building automobiles, Charles E. Duryea, who can well lay claim to being the dean of the profession in this country, has returned to his first love, so to speak, by bringing out a buggy type of automobile with the euphonious title of the "Buggyaut." Although this is really a return to the first principles in many ways, Mr. Duryea's first productions were of the high-wheel type of "horseless carriage," it also embodies a number of radical departures from its first prototype of the early '90's. An air-cooled, two-cylinder, two-cycle motor has been adopted as the power plant, the cylinders being placed almost horizontally under the rear of the body and just slightly forward of the rear axle. The cylinders face forward and are cooled by integrally cast flanges, the flywheel being placed between them. To increase the cooling effect, the motor is inclined at an angle of 15 degrees from the horizontal, and with its two 3 3-4 by 3 3-4-inch cylinders, it is rated at 10-12 horsepower.

A separate muffler is fitted to each cylinder, and as they are large in size and efficient in action, the result is a very quiet-running buggy. The entire power plant is supported on a three-point suspension, and drives by means of extensions of the crankshaft of the motor and small grooved pulleys to large internally grooved rings bolted to the inner faces of the driving wheels. In fact, the method of transmitting the power is one of the most distinctive features of the car. The method is an old one in machine shop practice, having become familiar through long usage on tumbling barrels in foundries, hoisting drums and the like, though for that matter Mr. Duryea states that there is not a single new thing on the car, everything involved in its construction having been thoroughly tried out by years of usage in other fields.

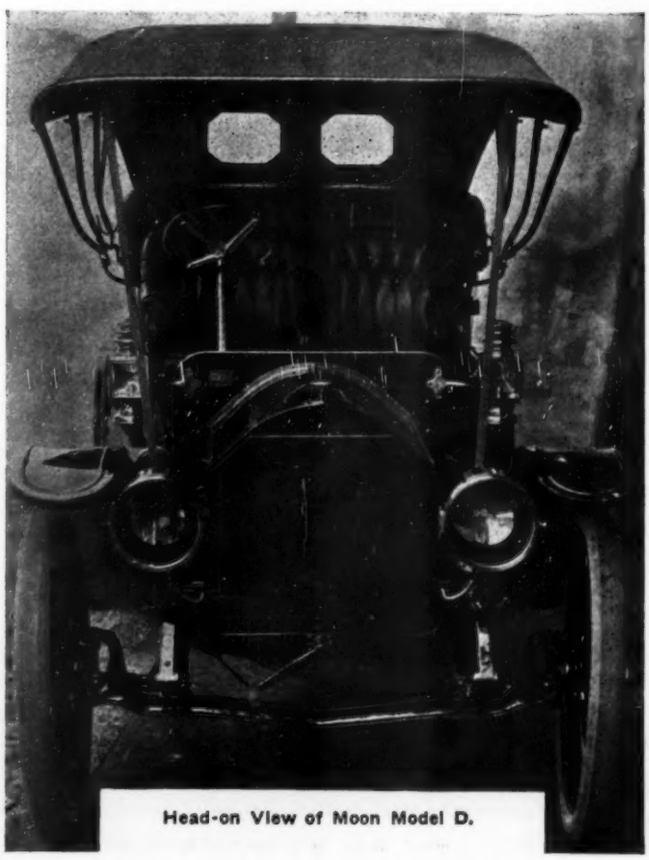
The driving wheels are mounted directly on a dead axle of square section steel and a differential is dispensed with. To obtain the compensating action of a balance gear, an eccentric is fitted to the steering post. When the latter is turned to send the car round a corner, this eccentric shifts the point of the subframe to the inner side while rounding the corner, thus releasing the inner grooved roller from engagement and permitting the outer wheel alone to drive. These grooved rollers are of hardened steel, while the large driving rings are of soft iron, thus giving a good coefficient of friction and minimizing the wear, owing to the ample surface presented. The whole power plant is strongly trussed, binding it together as a solid unit with a three-point type of suspension.

Ignition is of the high-tension type, by means of coil and batteries, the timer and distributor being located in the flywheel of the motor. Another distinctive feature of the latter is the means of starting, which is accomplished from the seat by means of a pull-up handle connecting with the flywheel by means of a cable. Pulling the handle quickly as far as it will come serves to turn the motor over several times, and the operation may be repeated as often as desired, by merely letting the device resume its normal position after each trial.

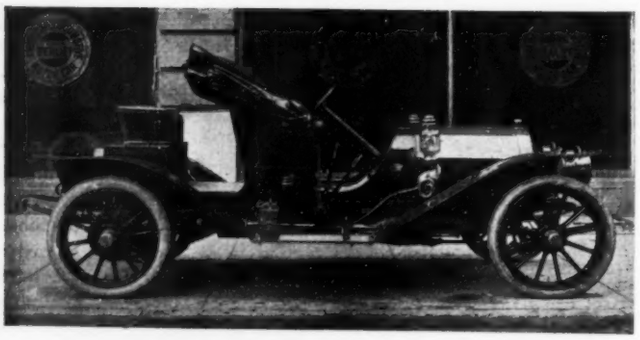
The wheels are 36 inches in front and 42 inches in the rear, and are shod with 1 1-4-inch solid tires. The forward axle is a 1-inch I-beam, while the rear is a 1 1-4-inch square axle, the wheels running on ball-bearings. The wheelbase is 80 inches, and the tread standard, though the latter will be varied to order. Steering is by cross-lever and post supported on side bar, the steering pivots being inclined and all points made adjustable. The brakes consist of grooved iron shoes making engagement with the driving rings. They are operated by a pedal, and the latter, together with the change pedal, located at the rear of the footboard instead of forward, as customary, constitute the only pedals employed. The car is usually designed to make a maximum speed of 20 miles an hour, though this may be varied by altering the size of the grooved rollers. The weight, all on, is 850 pounds, 60 per cent. of which comes on the rear wheels. The body equipment is of the regular buggy type, as will be apparent from the accompanying photograph, although a jump seat in the rear is also provided, the price with this equipment being $750. Full elliptic springs fore and aft are employed and they have been made of ample size to carry the weight. It will be noted that the specifications of the car meet the ideas of many who wish to see a two-cycle, friction-driven combination.

NEW MODEL ADDED TO THE MOON LINE.

What may be most appropriately termed a between seasons' model has just been added to its line by the Moon Motor Car Company, St. Louis, Mo. It is officially known as "Model D," and is a seven-passenger car on a 121-inch wheelbase. The construction and design throughout follow the same standards as those which characterize the Moon product this year. The neat and attractive lines of the new model are strikingly apparent in the head-on view presented by the accompanying photograph.



Head-on View of Moon Model D.



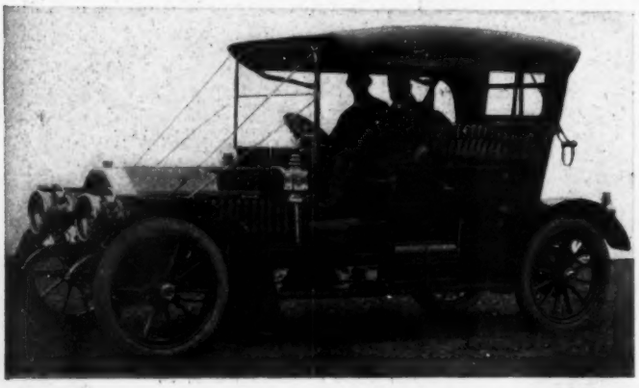
Specially Designed Berliet for Long Distance Tour.

BERLIET SPECIAL THREE SEATER FOR TOURING.

Runabouts are not generally looked upon as the ideal type of car for a long tour, although what has come to be known as the "touring runabout" has come into vogue within the past two years and has become deservedly popular, owing to its light weight as compared with the regulation type of touring car, as well as the greater ease with which it can be handled. S. L. Schoonmaker, well-known through his connection with the steel industry, has just designed a special body for this type of car. It is intended for the accommodation of himself and Mrs. Schoonmaker, and will be used on a tour of Europe. This special body has been designed for an American Locomotive Auto Company's standard 40-horsepower chassis, on which it is shown mounted in the accompanying photograph. One of its most striking features only becomes apparent upon a little investigation, and that is the unusual amount of storage room provided, as well as the ingenious type of hood that has been designed for the forward seats. There are large drawers under these seats, while under the rumble is a capacious storage box, and yet there is room enough for a trunk back of the rumble seat, without the necessity of employing a trunk rack. It should be an ideal two-person touring outfit.

PEERLESS BRINGS OUT CLOSE-COUPLED SIX.

Body design would appear to be much the same regardless of the type of car, and even the owner of the big six-cylinder who has power and to spare is not overanxious to tote around with him any more weight in the shape of a body than is actually necessary to accommodate the number he had in view when becoming the owner of the machine. This probably accounts for the Peerless "close-coupled" six-cylinder car shown in the accompanying illustration and which recently became the property of a prominent resident of Akron, O., the "tire city." The use of this type of body on a large car has the great advantage of bringing its entire seating capacity well between the axles and quite a distance forward of the rear axle, which contributes very largely to the comfort of the passengers in the tonneau. This is also possible without giving the car an unusually long wheelbase.

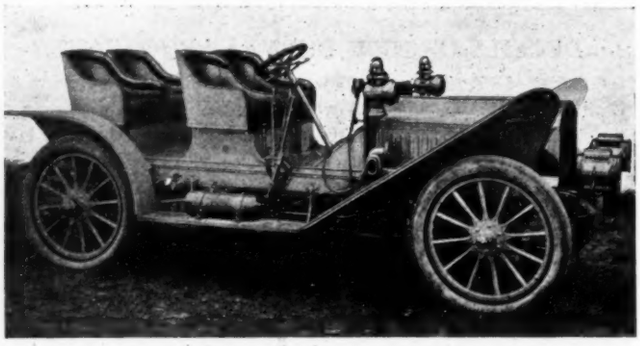


"Close Coupled" Body on a Peerless Six-cylinder.

FEATURES OF THE CLARK STEAMER FOR 1908.

In numerous ways the Clark steamer is distinguished from others of its class in the steam field, although, as will be seen from the accompanying illustration, its external appearance has been made to conform to that of the standard type of car, whether its power be steam or gasoline. The Clark has been on the market for several years and is manufactured by Edward S. Clark, 242 Freeport street, Boston, Mass. The power-plant consists of a four-cylinder opposed, horizontal, high-pressure steam engine located transversely underneath the frame, so that all valves and other parts are very accessible. All the working parts of the engine are thoroughly protected against the dust and dirt of the road. Lubrication is positive and plentiful, and with the large bearing surfaces provided wear is reduced to a minimum and but little attention is required under ordinary running conditions.

Owing to the high temperature at which the superheated steam is used, poppet valves are employed, a great advantage of this type being found in the fact that where the cylinder becomes



Four-seated Runabout Type of Clark Steamer for 1908.

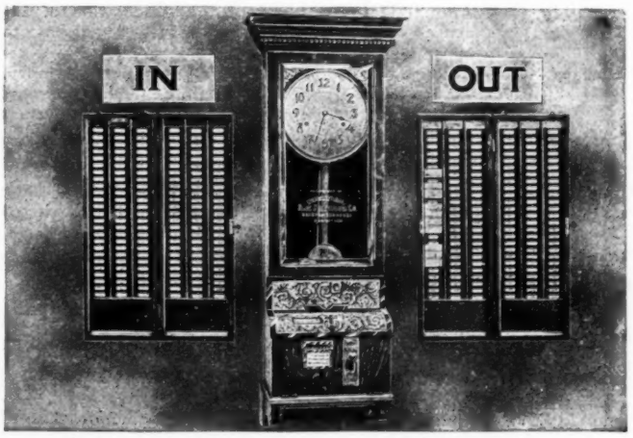
flooded through carelessness or otherwise, the valves will be lifted from their seats, thus protecting the working parts of the engine from damage. Valve operation is exactly the same as on a gasoline motor, the camshaft and its cams being designed to give all changes of cut-off and reverse, and insuring better economy of fuel than is possible with the slide valve. The generator, which is of the flash type, is placed forward under the hood, while just forward of it is the condenser, in the same location as the radiator of a gasoline car, this arrangement being original with the Clark.

All changes of speed are controlled by the throttle, which is placed above the steering wheel, while the adjustment of the combined fuel and water pump is controlled by a wheel placed below the steering wheel. This allows the operator to make all necessary changes in the amount of water fed to the boiler, in order to meet varying conditions of roads and grades, the generator only making steam as fast as it is used. The adjustable water pump is placed on the footboard, where it is easily accessible, and the valves can be readily demoved. The pump plungers have a varying stroke ranging from zero to full capacity, but all the fuel and water are displaced from the body of the pump every time, preventing air from accumulating there and deranging it. The varying stroke of the pump is effected by moving a block on a quadrant operated by a worm, the position of which is easily controlled by the hand wheel on the steering column. The steering wheel can be thrown into a vertical position, thus locking the throttle valve and making the seat more accessible.

Two change-speed gears running on Hess-Bright ball-bearings are provided, the pinions being of chrome nickel steel, a bevel gear drive by propeller shaft connecting the engine and rear axle. The wheelbase is 110 inches, and the tread standard, while the tire equipment consists of 36 by 4-inch tires on all four wheels. The tonneau is large and roomy and the car will carry seven. It lists at $3,500, while a roadster model with either two or four-seated body lists at $2,500.

PREVENTS UNAUTHORIZED USE OF A CAR.

One of the earliest abuses that sprung up in connection with the keeping of automobiles in garages has been their unauthorized use by the chauffeur, and it is safe to say that this abuse is still very frequent to-day, and is, moreover, responsible for a very large percentage of the accidents that happen. In fact, it is safe to say that a majority of the automobile disasters have happened in cases where the chauffeur has had the car out surreptitiously with a few friends of his own choosing, before



Time Recording System Designed for Garage Use.

whom he found it necessary to indulge in reckless driving. The result is that the car owner is given considerable undesirable publicity in the newspapers, beside which he has to foot the repair bill and the garage keeper has an unpleasant quarter of an hour explaining why the car was out.

To avoid such a state of affairs, numerous systems of checking the movements of cars in a garage have been devised, but with few exceptions they have been found lacking in one respect or another. To overcome such faults, the International Time Recording Company, Endicott, N. Y., has perfected a system whereby a car cannot be taken out of the garage without an automatic record of the exact time being recorded. An International card recorder is placed in the most convenient location overlooking the exit and entrance, while alongside it, two card racks, numbered from 1 to 200, are placed, respectively labeled "In" and "Out." Cards with from 6 to 18 registration columns for each day are placed in the "In" rack, each car being given a recorder number. When all the cars are in the garage, all the cards are in their respective pockets on the "In" rack.

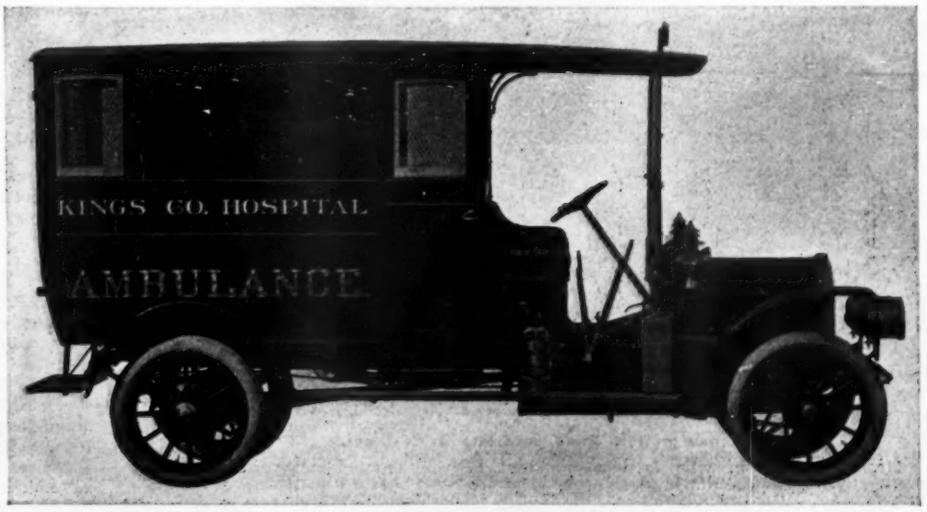
Whenever a driver presents an order to take a car out, the foreman of the garage receives the order, and when the car comes to the exit, the numbered card of the automobile is taken from its rack, the time recorded in an "Out" column, and the card placed in the "Out" rack by someone authorized to allow cars to go out. On its return, its time is recorded in an "In" column, and the card transferred to that rack, a copy of this record being furnished the owner each week so that he knows exactly when his car has been taken out of the garage and when it has been returned. In the garage itself a glance at the rack shows at once exactly what cars are in or out.

Many of the large garages in cities have installed this system of checking cars, and in addition use an International card recorder to register the arrival and departure of employees and to record the exact amount of time spent on repair jobs, this latter system being a great preventive of disputes over the time expended on this work. Each man is given a job card when he begins work on a car, and he rings "In" the moment he begins work, and "Out" when he finishes. The card is a voucher of the time spent and is also a guarantee to the garage keeper that the time was actually put in on that job, for as soon as one is ended the mechanic must report to the foreman for work on the next, and if there be nothing ready the repairman is given a card marked "waiting time," this card being used in the same manner as the others. This feature of the system forces the foreman to plan his work ahead so there will be as few "waiting time" cards as possible.

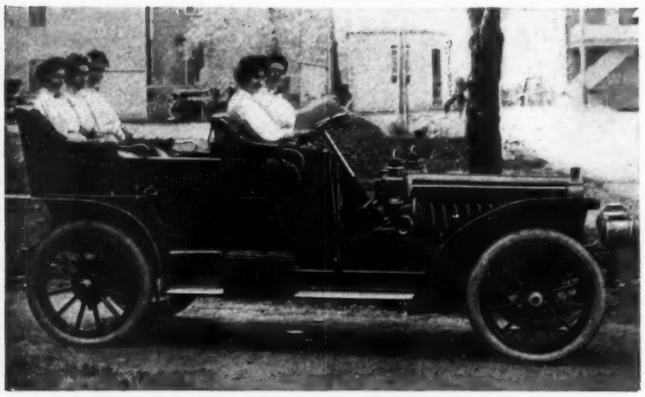
This garage card recorder system has proved its worth on numerous occasions by showing that a car was in the garage, when its owner has been accused of having been the cause of some serious accident, or other offense. Its chief value naturally lies in the check it keeps on the owner's employee so that the latter cannot use the car at night.

STUDEBAKER GASOLINE-DRIVEN AMBULANCE.

One of the first gasoline-driven ambulances to be used in this part of the country has just been delivered to the Kings County Hospital, Brooklyn, by the New York branch of the Studebaker Company. It is built on the standard Studebaker 30-35-horsepower chassis, with a 136-inch wheelbase, and represents a new type, of which several are now under construction for hospital use. Four collapsible berths are provided, so arranged that they can be folded up out of the way when not in use. Access to the interior is gained both from the rear and from the side, just behind the driver's seat. The smooth and quiet running of the gasoline motor and the great ease with which it can be controlled, as well as its far greater speed and unlimited radius of action make the gasoline ambulance far superior to the electric for emergency service, and the wonder is that its unlimited possibilities in this direction have not been realized much sooner than has been the case, for next to getting to fires promptly there is nothing in which speed is so often a matter of life and death as the numerous calls for an ambulance which are a daily part of life in every large center of population. The panting and galloping horse with the clanging wagon behind him is a familiar sight in every city, and the fuss he makes in covering the ground gives an impression of great speed, but the manner in which runabouts and touring cars on pleasure bent swiftly glide by and still keep within the legal speed limit shows more plainly than words that the ambulance horse's speed is as much vertical as it is horizontal, which accounts for the poor progress made.



New Studebaker Ambulance Put into Service by the Kings County Hospital.



A Charming Quintette of Stevens-Duryea Girls.

The ladies of the office force of the Stevens-Duryea Company, of Chicopee Falls, Mass., occasionally take a little time from their office duties and enjoy the pleasures of a short trip in a Light Six Model U Stevens-Duryea Touring Car. The illustration shows them returning from one of the runs.

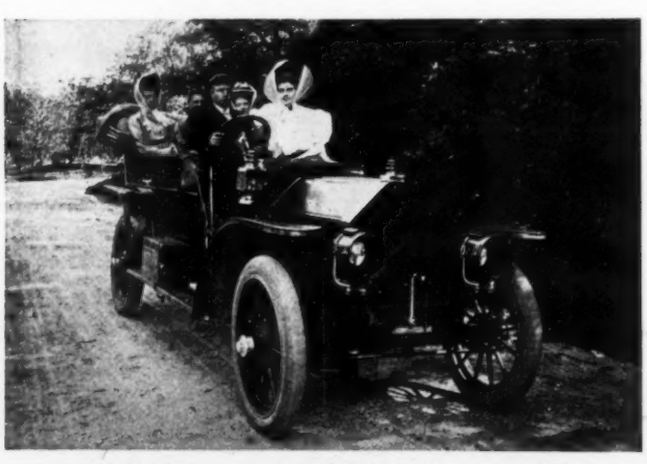
EFFICIENCY OF THE "BLUE BOOKS."

Every year these "Blue Books" demonstrate more and more ingenuity in construction and draughtsmanship. Especially is this the case with the general maps of the New England issue, placed rightly, at the very beginning of the volume.

Every city which is the center of a section is identified by a number within a circle, which corresponds to the page on which the information relating to all the routes radiating from that city is to be found, while intermediate and terminal points are taken further care of in the general index; and a new and original feature has been added in special diagrams, showing the entrances to and exits from all the principal places.

It might be thought that this multiplicity of directions and minute details would tend toward confusion, but it does not. Its interpretation indeed may, when en route, be left to any member of the party, down to the youngest capable of reading, and, furthermore, it is a bound book, and not a book just glued together at the back. It will, with moderate protection from the rain, stand the wear and tear of a long season.

It will no doubt interest users of the present "Blue Books" to know that the publishers have in preparation an additional volume (No. 4), covering the main-traveled automobile routes in the Middle West. Broadly speaking, the new work will deal with the important territory between Cleveland, Toledo, Chicago and Milwaukee on the north and the Ohio River on the south, with various extension and connecting routes.



A. Y. Bartholomew in His Glide, and His Bride-Elect.

Mr. Bartholomew, who is vice-president of the Bartholomew Company, of Peoria, Ill., is at the wheel, and sitting beside him is his fiancee, Miss Lucy Hubinger, of Peoria. The happy event is to occur in the middle of the summer. The bridegroom-elect is the son of J. B. Bartholomew, president of the company.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

June 25-27.....—Detroit, Third Annual Summer Meeting of Society of Automobile Engineers.

Dec. 31-Jan. 7..—New York City, Grand Central Palace, Ninth Annual Automobile Show, conducted by the American Motor Car Manufacturers' Association, with Exhibits by the Importers' Automobile Salon, Inc., Alfred Reeves, general manager, 29 West 42d St.

January, 1909..—New York City, Madison Square Garden, Ninth Annual National Show of the Association of Licensed Automobile Manufacturers. (Exact date to be announced.)

February, 1909 —Chicago, Coliseum and First Regiment Armory, Eighth Annual National Exhibition, National Association of Automobile Manufacturers. (Exact date to be announced.)

Races, Hill-Climbs, Etc.

June 5.....—Jamaica, L. I., Straightaway Time Trials, Long Island Subway Celebration Committee, Assisted by Long Island Automobile Club.

June 6.....—Worcester, Mass., Dead Horse Hill Climb, Worcester Automobile Club.

June 9.....—New York City, Orphans' Day, Committee of Fifty of the Local Trade.

June 10.....—Baltimore, Orphans' Day Automobile Outing, Automobile Club of Maryland.

June 13.....—Hartford, Conn., Orphans' Day, Automobile Club of Hartford.

June 17.....—Buffalo, N. Y., Orphans' Day, Automobile Club of Buffalo.

June 24-27.....—New York and Philadelphia, Double-Head Endurance Run to Delaware Water Gap, under the auspices of the "Public Ledger" of Philadelphia.

June 24-27.....—Chicago, 1,200-mile Reliability Run, Chicago Motor Club.

June 27.....—Norristown, Pa., Skippack Hill Climb, Norristown Automobile Club.

July 4.....—Lowell, Mass., 250-mile Road Race, Lowell Automobile Club.

July 4.....—Wildwood-by-the-Sea, N. J., Annual Speed Tournament, Motor Club of Wildwood.

July 7-8.....—Buffalo, N. Y., National Convention of the American Automobile Association.

July 9.....—Buffalo, N. Y., Start of the Fifth Annual A. A. A. Reliability Touring Contest.

Sept. 5-9.....—San Francisco-Los Angeles Reliability Run, Automobile Dealers' Association of San Francisco.

Sept. 14.....—Chicago, Annual Economy Run, Chicago Motor Club.

October.....—Vanderbilt Cup Race, Long Island Course, auspices of Vanderbilt Cup Commission.

FOREIGN.

Shows.

October 11-18...—Paris, International Congress and Public Exhibition on Roads and Road Making for Modern Locomotion, French Ministry of Public Works.

December.....—Paris, Eleventh Annual Salon de l'Automobile, Grand Palais, Automobile Club of France.

Race Meets, Hill-Climbs, Etc.

June 1-18.....—Reliability Trials for Pleasure Cars, Automobile Club of Great Britain.

June 14.....—Mount Cenis Hill Climb, for Voiturettes.

June 9-17.....—Touring Competition for the Prince Henry of Prussia Prize, Germany, Imperial A. C.

June 15-19.....—Scotland, Annual Scottish Reliability Trials.

July 6.....—Voiturette Grand Prix, Dieppe Circuit (Automobile Club of France.)

July 7.....—Grand Prix of Automobile Club of France, Dieppe Circuit.

July 13-17.....—Ostend, Belgium, International Race Week, Automobile Club of Ostend.

Aug. 12.....—Ardennes Circuit Races and Coupe de Liederkerke, Automobile Club of Belgium.

Aug.....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

Aug. 29-30.....—France, Mont Ventoux Hill Climb, Vauclusien Automobile Club.

Sept. 1-8.....—French Voiturette Contest, Auspices "L'Auto."

Sept. 6.....—Bologne, Italy, Florio Cup Race, Automobile Club of Bologne.

Oct. 11.....—Berlin, Germany, Gordon Bennett Balloon Race. Aeronautical Club of Berlin.

PUBLIC UTILITY OF HIGH-ROAD TRAINS ON FRENCH HIGHWAYS

THE following information concerning the running of passenger and freight trains on the highways of France is furnished by Consul-General Robert P. Skinner, of Marseilles:

There recently passed this consulate a "Train Renard," composed of a locomotive, two passenger cars, and one baggage car, which had just arrived from Paris under its own power and over the ordinary roads, thus supplying to the public a demonstration of its own efficiency. The trains mentioned are composed of elements, each receiving the energy of a vehicle called the locomotor, which being placed at the head of the train distributes the necessary power to the following elements by means of a transmission shaft extending from one end of the train to the other, thus enabling each car to utilize its own adhesion to the road surface as a means of advancement.

The locomotor—that is to say, the creator of the energy—is therefore lighter than any of the cars. Trains of this type completely loaded are able to maintain a speed of 21 kilometers (13.05 miles) per hour in case of passenger trains on levels and of from 15 to 16 kilometers (9.32 to 9.94 miles) per hour in the case of freight trains. It is said that freight trains of this type are able to maintain an average of from 10 to 12 kilometers (6.21 to 7.45 miles), fully loaded, in any kind of country.

It would be useless to enter into further details regarding these high-road trains, as far as the United States is concerned, inasmuch as we are without a road system sufficiently advanced to make their application possible. On the other hand, the adoption of passenger and freight trains over railless roads in France has become not only a possibility but a fact. Already hundreds of inaccessible hamlets hitherto served by slow-going diligences, are kept in constant contact with the outside world by means of large auto-omnibuses, moving at an average rate of 15 miles an hour, transporting both passengers and express parcels; and now, following this development, comes the explosive engine motor, drawing full trains of cars, which it is claimed can be operated on level or mountainous roads at an exceedingly moderate expense. In other words, if all that is claimed for these trains is realized, it will be possible to give 25,000 communes in France, which do not at present enjoy railroad facilities, approximately the same advantages with respect to transportation as the more populous and highly favored centers.

This illustrates how much the creation of a better highway system would benefit the rural populations of the United States, who are at a great disadvantage in regard to transportation as compared with foreign communities, and deprived of the various kinds of satisfaction resulting from the existence of modern highways.

THE WORLD'S AUTOMOBILE TRADING ACCOUNT WITH FRANCE

PARIS, May 25.—Though the total exports for January, February, March, and April of the present year are lower than the corresponding periods of 1907 and 1906, there has been a sufficient increase during the past month to give ground to the belief that 1908, as a whole, will not be such a slack year as was expected some time ago. With the total automobile exports for the first four months of 1908 standing at $8,376,400, the deficit on the same period of 1906 is only $863,200. Compared with 1907 the deficit is $2,011,200, the figures for the first four months of 1906-7-8 being: $9,239,600, $10,387,600 and $8,376,400. These figures include automobile exports only, motorcycles and their parts being classified separately.

The United States, Russia, Algeria, Turkey and Spain are the only countries having increased their trading account with France during the first four months of the current year. England, the best customer, has taken automobiles to the value of $118,000 during the month of April alone, bringing the total up to $3,782,000 for the first four months of the year, this amount being a trifle higher than that of 1906. Nine other countries have cut down their automobile trading accounts with France. During these four initial months the United States has taken in French cars to the value of $846,800, an amount which is higher than both 1906 and 1907. The trading account per nation, as shown by the Government returns is as follows:

French Automobile Exports for First Four Months of 1906-7-8.

Country	1906	1907	1908
Great Britain	$3,722,000	$4,587,600	$3,782,000
United States	819,400	789,000	846,800
Germany	1,335,800	1,001,200	723,200
Belgium	1,066,000	1,055,600	624,200
Algeria	245,000	257,400	357,600
Argentine Republic	533,200	509,200	299,600
Spain	115,800	150,000	242,200
Russia	78,600	65,600	226,000
Brazil	52,400	342,400	163,600
Italy	533,600	339,400	147,400
Switzerland	174,000	299,600	107,800
Turkey	22,600	10,800	41,600
Austria	35,600	45,200	19,800

Of the four nations sending automobiles into France, England alone has increased her trade during the four months under review, the amount having risen from $18,000 in 1907 to $21,200 during the first four months of 1908. America's trade dropped from $7,800 to $3,800; Germany's business shows a drop from $180,000 to $149,400.

FRANCE PROMINENT IN MOSCOW SHOW.

Moscow, May 20.—A religious ceremony, followed by an elegant luncheon, marked the opening of the Moscow automobile show, presided over by the Military Governor of the city and assisted by the consuls of America, England, France, Germany, and other European countries. France believes there is good business to be done with Russia, now that the effects of the war are practically over, and has made every effort to be first in the new field. She has so well succeeded that French cars occupy almost all the stands, the only exception being Fiat, from Italy, Germain and Pipe from Belgium, Mercedes from Germany, and Humber from England. Touring cars, as well as commercial vehicles, are shown and are attracting attention. American firms, though having previously done business with Russia, are not represented at the exhibition.

INCREASE OF TAXICABS IN LONDON.

Consul-General Robert J. Wynne reports that taxicabs have become such popular street vehicles in London that the demand for them is much greater than the supply. He adds:

"The taxicabs are used by all classes of people, day and night, at the uniform rate of 16 cents a mile, and they represent a most attractive appearance in chocolate, blue, yellow, red and green hues, with chauffeurs in the brightest and smartest liveries. Although scarcely a year has passed since these swift-moving electric and petrol carriages appeared, the capital already invested in London taxicabs is $10,000,000. There are 758 taxicabs on the streets, 2,600 taxicabs on order, 1,700 licensed drivers, an average of 55 certificates granted each week. There are eight London taxicab companies, their average day's takings of a taxicab being $11.20.

THE AUTOMOBILE

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THEN, LET'S HAVE AN AMERICAN RACE.

When one applies the uncompromising rules of logic he is unable to supply reasons why the automobile manufacturers of the United States, who consider racing a commensurate advertisement for the money expended, have not the same right as the European makers to decide as to what rules shall govern them in so doing.

When the American maker goes abroad to race he always has accepted as a part of the contract the existing foreign regulations, even when it has cost him considerable expense and effort to comply therewith. Until this year of our Lord 1908 the racing visitors to this side of the ocean have been subjected to no greater inconvenience than the voyage itself.

But this year for the classic Vanderbilt Cup race the committee having the event in charge, and containing representatives of the American manufacturers, have had the temerity to establish rules which do not this time coincide exactly with the foreign regulations which annually receive an overhauling. It is even known that the American committee took into consideration the fact that certain prominent American makers had gone to no small outlay in preparing for a 1907 race, which did not take place because a properly guarded course could not be secured and Mr. Vanderbilt and his associates were averse to repeating the experiences of 1906, marred by one fatality and scores of narrow escapes of various kinds.

It was then that the Long Island Motor Parkway was born, and its dedication will be the 1908 Vanderbilt race, the rules for which say that every part of a car must be manufactured in the country from which it is entered. Furthermore, a maker is told that his car must weigh at least so much—thus preventing skeleton construction—and is also informed that it must not weigh more than a certain figure—thus barring monster road locomotives. Surely these ideas are not so very reprehensible, even from an engineering standpoint.

And, now, just a few words about the international rules, so called—though it would not seem that they are entirely international when the country making more automobiles than any two European countries combined had nothing to say in their adoption. In the first place, nothing is said about the entire car being made in the country from which it is entered, which would appear to be the first requisite of an industrial competition—and that is exactly what automobile racing has become. Granted that it is only just that the race governing body of a country should take into reckoning the wishes of the home makers, certainly this is thoroughly done in France, where its club turns racing over to a committee which is dominated by the makers, and one of them is even the chairman. Please keep this in mind when passing upon the merits of the French objections to the 1908 Vanderbilt conditions; also connect with the British kick the fact that that country has never had a car in the American race, and at the same time it might be well to recollect that the leading British firm—Napier, to be specific—is not taking part in the French Grand Prix because it does not like the rules.

These rules say that a car must weigh at least so much, and the figures are identical with the Vanderbilt minimum weight. But instead of establishing a maximum weight, the rules limit the amount of piston displacement; last year the fuel was the limit used to prevent the building of abnormal cars. Despite the fact that the piston displacement is limited, four-fifths of the cars in the Grand Prix exceeded 100 horsepower, and it is safe to predict that measured by the same dynamometer the top horsepower of the Vanderbilt list will not exceed the most powerful Grand Prix car. In the opinion of the experts, 100 horsepower is sufficient to travel at the greatest possible speed on any highway that now exists. But the Europeans, mayhap fearful of defeat, say that they will not compete in the Vanderbilt race unless the rules coincide; nor will they relieve their fears by substituting another engine with greater piston area, though they have months in which to do so. In other words, you must play always according to their rules, or it will be a case of getting into another yard—if one is supplied. Therein comes the other part of the story.

At Chicago, in March, 1902, the American Automobile Association was formed. The following year, in the club book of the Automobile Club of America, there appeared the following:

> The American Automobile Association, embracing in its membership the principal automobile clubs of the United States, was formed in March, 1902, one of its functions being to regulate and control automobile racing in the United States.
>
> All authorized race meets in the United States are now held upon sanction from and under the racing rules of that association, of which the Automobile Club of America is a member.

In view of the fact that the A. C. A. "corresponded" with the foreign clubs previous to the organization of the A. A. A., that arrangement was not disturbed, and pos-

sibly might have continued indefinitely if recent events had not transpired. It is pertinent to know, however, that no authority has ever been invested in the A. C. A. by the A. A. A., whereby the club could obligate the national body in international affairs. The club acted as "correspondent"; there its function ended.

And it would appear that occasionally its manner of transmitting this correspondence was open to the charge of neglect, for at such an important affair as the Ostend meeting, in July last, no delegate from the club attended, and consequently did not participate in the discussion of the much-referred-to racing rules. It is a fact of record that the secretary of the A. C. A. did send to the secretary of the A. A. A., in September last, a copy of the rules which had been adopted at Ostend, but unaccompanied by any comment whatever. There was no reference to any assumption on the part of the A. C. A. that it considered the A. A. A. holden to the acceptance of the rules, and certainly there could not have been any assumption of authority on the part of the club to bind the American race-controlling body, for the particular reason that the club did not even have a delegate present. At a subsequent session of the international gathering in Paris the club delegate did attend, and now states that he accepted the rules in behalf of the club, though the club never sent any notification to this same effect to the A. A. A., nor did the examination of its records betray any evidence that any such authority had been assumed.

But the impression has existed in Europe, apparently, owing to the similarity of names, that the club was the "whole thing," and that it even conducted the Vanderbilt race. Thus the confusion of the situation by the foreign clubs, which, for the present purposes of the A. C. A., is contorted into a demand that the club supply the foreign makers with a race under the so-called international rules. True it is that these same foreign clubs have practically ignored the Vanderbilt race in recent years, the French club after its killing of the Gordon-Bennett declining to assist in the selection of a team from that country. And one can accept the statement that what the French club says is as good as the verdict that will be agreed upon ultimately, even though slightly modified.

Then we reach that part of the story where it is necessary to ask as to where the American manufacturer gets off in the premises. It would seem a plain matter of common sense and justice that he compete in the American race, in the drawing up of the rules for which he had a voice. As to why he should now build other cars for the sole purpose of assisting the club in giving the foreigners a race, according to their rules of this year—which may change again next year—is something that finds him in a rather diffident mood, for it costs the American maker more to build a racing car than it does the European, labor being cheaper on the other side.

When the recently-elected president of the A. C. A., who is a busy man and a business man, brand new in automobiling, gains a thorough knowledge of the situation, it is not unreasonable to surmise that there will be some change of the mushroom policy of the expensively-run and heavily-bonded clubhouse in West Fifty-fourth street, the support of which does not devolve upon the industry, nor upon automobilists generally, for each city should supply the revenue for its local club. The New York City club should be content to be a part of the whole, and not try to be the whole thing, for this is a very big country, and the people in it—automobilists as well as others—have not yet placed the seat of government in New York City, even if it is the metropolis.

The Vanderbilt Cup race deserves the support of the American makers, which it will get. As to any other race—well, the future will tell as to what degree of representative American support it will receive.

N. A. A. M. AFFIRMS POLICY OF SUPPORTING A. A. A.

AT the meeting of the National Association of Automobile Manufacturers, held at the association's headquarters, 7 East Forty-second street, New York City, Wednesday afternoon, June 3, President Henderson called attention to the existing situation as regards the position of the American Automobile Association in national affairs in this country, but stated that as the N. A. A. M. had placed itself on record some time previous as being in due accord with the aims and policies of the three A.'s, there was no necessity for further formal action.

President Henderson says: "We shall uphold the American Automobile Association and the policies which it has outlined as represented through its Central Conference Committee, which is representative of the entire American automobile industry."

An election was held to fill existing vacancies, W. C. Leland taking office as the representative of the Cadillac Motor Car Company, vice W. E. Metzger, resigned; Marcus I. Brock was elected to represent the Autocar Company, and Edwin R. Thomas was elected to represent the E. R. Thomas Motor Company, Buffalo. The following were present: Thomas J. Henderson, A. L. Pope, W. E. Metzger, Charles C. Clifton, H. B. Joy as proxy for S. D. Waldron, H. L. Smith, Benjamin Briscoe and Windsor T. White.

AN UNBIASED VIEW OF THE SITUATION.

The New York *Times* is one of the several New York dailies which prints impartially the news of the Automobile racing controversy. Here is what it commented on Monday last:

What policy may be pursued with respect to uniform regulations for international races in America remains for the American manufacturers who compete to decide. It is true, nevertheless, that the Ostend conference is dominated by the Automobile Club of France, and that the Automobile Club of France is dominated by the French manufacturers. In fact, the head of the club Contest Committee is the managing director of the Panhard Company. If the rules dictated by the Automobile Club of France are proper rules, they will undoubtedly in the end prevail, but the American manufacturers have expressed by their action their resentment of French dictation.

RHODE ISLAND PASSES HORSEPOWER TAX LAW.

PROVIDENCE, R. I., June 1.—After having undergone numerous slight amendments for which members of the Senate and House stood out for, a compromise was finally reached and the bill passed both houses unanimously. The chief departure from precedent in this and other States is the adoption of a horsepower tax, which is $5 per annum up to and including cars of 20 horsepower; $10 for 20 to 30 horsepower; $15 for 30 to 40 horsepower and $25 for cars of over 40 horsepower. Dealers' licenses will cost $50, and drivers' licenses will cost $1 in the case of a car and 50 cents for motorcycle riders. The amendment prohibiting tire chains was killed and they may be used on slippery roads under the law as it now stands.

CEDRINO MEETS TRAGIC DEATH.

BALTIMORE, May 29.—Emanuel Cedrino, while practicing on the Pimlico course for to-morrow's meet, met instant death. He was working out the Fiat *Cyclone*, a well-known racing car, when the accident occurred. He had made three rounds of the mile circuit. The first he covered in 56, the second in 53 2-5, and the third in 51 seconds. Again he started with 50 seconds, and the gasoline track record in view. As the flyer turned into the backstretch, the right front tire gave way, and the wheel collapsed. The car turned a complete somersault. Cedrino was picked up dead.

Emanuel Cedrino.

Emanuel Cedrino came to this country four years ago direct from the factory of the Fiat Company in Milan, to enter the employ of Hollander & Tangeman, the American agents. Cedrino had had charge of the mechanical force of the Fiat team for the Gordon-Bennett races in France and Germany.

Soon after arriving here he continued his racing career, which had been begun by participation in the Mont Cenis hill-climb and other Italian contests, making his first appearance at Elkwood Park in 1905. On this occasion he established a new 50-mile track record. Cedrino drove one of the Fiat cars in the Vanderbilt race of 1905, but did not take part in the race of the following year, owing to a trio having been sent from Italy to man the cars. He was second in the Briarcliff race this spring.

With the rising popularity of 24-hour track racing, Cedrino once more took up competition and evolved the winner of the last race of this character held at Morris Park at the close of last season. His most remarkable feat, however, was his driving the Fiat *Cyclone* on Ormond beach 300 miles at the rate of 77 miles an hour. He was confident at the Baltimore meet he would beat Christie's mile record of 51 2-5 seconds for gasoline cars. In fact, he had just scored 51 seconds in practice before the fatal round wherein he met his death.

His widow will take back to Italy with her on Saturday, when she sails in company with the body of her late husband, close to $7,000, made up of insurance, bank savings, gifts by friends, of the Fiat Company, and smaller tributes, including one from the Flat Tire Club.

The funeral services took place to-day at the Italian Catholic Church, on Thirty-sixth street, between Ninth and Tenth avenues, and was largely attended by the trade and racing fraternity, with whom the deceased was deservedly popular.

FLORIO CUP RACE ON SEPTEMBER 6.

PARIS, May 20.—Italy will hold its most important high speed test under the international rules decided upon at the Ostend conference, the date of the meeting for the Florio Cup being Sunday, September 6, and the place the circuit of Bologne. Originally it had been intended to close the entries on May 31, but the decision has just been taken to postpone this until July 31. It is practically certain, however, that all the important French firms will take part in the Italian race. Owing to the importance of the event to French manufacturers. Victor Breyer, representative of the American Automobile Association in Paris, has been appointed special commissioner in France for the Florio Cup race.

GERMAN CLUBS ASK CONCESSIONS FOR TOURIS

BERLIN, May 15.—At the last meeting of the delegates of the Imperial Automobile Club and the affiliated clubs, the resolution was passed to petition the government to relieve foreign motor cars touring in Germany from all taxes for a period of sixty days. It will be interesting to see whether or not the clubs will have any success.

PROGRESS IN JERSEY TEST CASE.

TRENTON, N. J., May 29.—As was generally anticipated, the hearing in the case of R. H. Johnston, who is testing the constitutionality of the Jersey law on behalf of the touring bureau of the White Company, resulted in his conviction by Police Justice Harris, and a fine of $100 was imposed. The White Company was represented by X. P. Huddy and Peter Backes, while Assistant Attorney-General Nelson Gaskill and Theodore Backes appeared for the State. Before judgment was rendered, Mr. Huddy made a motion to dismiss the complaint, basing it upon the following grounds:

First—That the required tax of $10 per year which the New Jersey law demands of a non-resident owner of an automobile is a revenue tax and not a license fee imposed under the police power; that this revenue tax imposes an unconstitutional restriction upon the privilege of a non-resident citizen to enter the State of New Jersey, thereby infringing his liberty as guaranteed by the Federal constitution.

Second—That the New Jersey tax of $10, for the non-payment of which this defendant was arrested, constitutes an unconstitutional tax on interstate commerce, violating the Federal constitution which places interstate commerce within the exclusive jurisdiction of the United States government.

Third—That this court has no power to impose a fine as directed by the New Jersey statute, since the New Jersey tax in question is a revenue tax, this proceeding being non-criminal in its nature, and this court here to-day, if it imposes a penalty under the revenue tax, will be exercising the power of taxation, which is exclusively delegated to the legislative department of the government to the exclusion of the judicial.

Fourth—That this court has no power to impose a fine because the penalty, as prescribed in the New Jersey law, is discretional with this court up to the sum of $100, and that in order for the law to be valid, the exact and precise fine must be determined by the law imposing the tax, and the power of the legislature to impose a tax cannot be delegated to this court.

Justice Harris overruled this motion, whereupon an exception was taken. The defendant was then convicted and sentenced to pay a fine of $100. Mr. Johnston's counsel immediately gave notice of an appeal to the Court of Common Pleas, where the constitutional questions involved will be determined.

MORA "SIX" FIRST VANDERBILT ENTRY.

Although there have been rumors and statements of more weight than usually attach to the latter, that several cars had already been actually entered for the Vanderbilt Cup race this fall, Chairman Jefferson De Mont Thompson's letter of a few days ago to W. W. Burke of the New York branch of the Mora Company, Newark, N. Y., places a very different light on the matter. To S. H. Mora belongs the honor of having actually made the first entry for the American classic, and his company will be represented by a six-cylinder car which is now under construction at the new Mora factory.

MAY HAVE TWO CARS IN THE VANDERBILT.

It is said that Harry Levey, a New York sportsman, has pretty well made up his mind to make a double entry for the Vanderbilt Cup race through the nomination of his Hotchkiss and Woolsley racers. The Hotchkiss to be entered is the 130-horsepower car which Elliot T. Shephard drove in the last international race on Long Island.

Mr. Levey is an enthusiast with money to back his new hobby. His first entrance into the racing game was made at Ormond last winter with this same Hotchkiss.

TO START BUILDING PARKWAY SATURDAY.

Much enthusiasm has been evinced by the fraternities of sport and trade in the formal beginning of the Long Island Motor Parkway work at Central Park, Long Island, on Saturday, when at half past three in the afternoon, W. K. Vanderbilt, Jr., will cast the first spadeful of dirt. A big, spontaneous outpouring of automobilists is expected at the ceremony, which will take place on the Barnes tract, Jerusalem road.

VANDERBILT CUP RACE TO BE HELD OCT. 24

THE Vanderbilt Cup Commission has set Saturday, October 24, as the date for the next international race in this country. The course will be announced at least thirty days before the race. The distance will not be less than 250 nor more than 300 miles. Entries will close on September 1. Deferred entries will be accepted up to October 1 at a double fee of $2,000.

The national automobile clubs of France, Germany, Belgium and Great Britain have shown their appreciation of the Automobile Club of America's proposal to run a road race under European rules by casting their American racing lot with the New York Club, and giving it formal recognition as their representative in this country. At a meeting of the club's board of governors on Tuesday the following telegrams were presented:

Paris, June 2, 1908.

The Automobile Club of America, New York:

The Commission Sportive has decided to-day to recognize as official the Grand Prize race, organized by the Automobile Club of America, which is to be run under rules adopted at Ostend, and to disqualify all French cars taking part in the Vanderbilt Cup race; and, furthermore, the Automobile Club of France will continue to recognize no one but the Automobile Club of America as its official representative.

[Signed] BARON DE ZUYLON.

London, May 30, 1908.

The Automobile Club of America, New York:

Your position as our representative will be upheld. Congratulate you on organizing Grand Prize race. Will endeavor to induce entries from this side.

[Signed] J. W. ORDE, Secretary.

Brussels, June 2, 1908.

The Automobile Club of America, New York:

We will maintain and respect the agreements and rules adopted at the congress of Ostend in 1907.

[Signed] AUTOMOBILE CLUB DE BELGIQUE.

Berlin, May 29, 1908.

The Automobile Club of America, New York:

Imperial German Club has joined by letter, dated May 25, the protests of the French and English clubs, and has enjoined German automobile factories not to participate in Vanderbilt Cup race. We indorse the projected Grand Prize race of the Automobile Club of America.

KAISERLICHER (IMPERIAL) AUTOMOBILE CLUB.

Another cable was also presented, which is more interesting and somewhat sensational. It was from W. S. Hogan, one of the club's foreign representatives, and was as follows:

Paris, May 31, 1908.

The Automobile Club of America, New York:

French club much interested in your Grand Prize race. Holding extraordinary meeting Tuesday. Will then cable fully.

French club has also received cable from American Automobile Association offering to amend Vanderbilt conditions, if proposals sent direct to them. [Signed] HOGAN.

"No cable was ever sent to the French or any other European club that could be contorted into an offer to amend the Vanderbilt Cup rules," said Chairman Thompson, of the Vanderbilt Cup Commission. "The only cable transmitted was that directed by the Racing Board at its last meeting to be sent notifying the Automobile Club of France and the Royal Automobile Club of Great Britain that the A. C. A. was merely a local club, and that any communications sent direct to the American Automobile Association would receive courteous attention." The contents of this cable embraced solely a copy of the following resolution, which has already been widely published:

RESOLVED: That Jefferson deMont Thompson, the chairman of this Board and of the Vanderbilt Cup Commission, be instructed to notify the corresponding boards or committees of the representative automobile associations and clubs of foreign countries that the Autmobile Club of America is a local club situated in the city of New York without national functions or jurisdiction, and

That all communications concerning national or international affairs must be addressed to the American Automobile Association at its headquarters, No. 437 Fifth avenue, New York City, or to the chairmen of its respective boards; and

That so far as the rules of the Vanderbilt Cup race for 1908 are concerned, on receiving a communication direct from any foreign association or club concerning such rules, this board will give such communication prompt and courteous consideration.

A press dispatch from Savannah, under date of Tuesday, states that at a meeting of the local club held that day, the terms of a contract with the New York club for a race in November were accepted, that the action was telegraphed to the New York club's contest committee chairman, and that his acknowledgment had been received. The dispatch further stated that the Savannah Automobile Club would resign its membership in the A. A. A.

President Hotchkiss, of the A. A. A., makes the following comment on the action of the French club:

If the French manufacturers who compose the majority of the Committee Sportive of the French club, and one of whom is also the chairman, decline to compete under American rules, then the loss will be theirs, not ours. Although this feature concerns us but slightly, we are already assured of a sufficient number of foreign entries to give an international flavor, and are able to promise the automobile public that the 1908 Vanderbilt Cup race will be the banner event in its classic history. This race will be held October 24, over a stretch of the new Long Island Motor Parkway and necessary adjoining roads to complete the most perfect course ever supplied for such a race. William K. Vanderbilt, Jr., president of the Parkway, on Saturday next will turn the first spadeful of earth, and 1,500 laborers will be at work two days later.

It is perhaps pertinent to inquire why it is that a local American club in New York City is so anxious to assist a few disgruntled French manufacturers to compete with each other in a race in the United States. As for the American Automobile Association, it believes in America for Americans, and in the international supremacy of the American automobile through American contests conducted under American rules. If the French club does not want to compete under such rules, the loss is, I regret, theirs, not ours.

WILL GIVE FOREIGNERS A RACE TO SUIT.

The directors of the Automobile Club of America, of New York City, met last week and adopted the following resolutions:

"Resolved, That the Automobile Club of America hold in the fall of 1908 a road race under the rules of the International Association of Recognized Automobile Clubs as adopted at Ostend, July 14, 1907, and that the contest committee of the club be empowered to organize and carry out such a race.

"Resolved, That the Automobile Club of America give a gold cup, to be known as 'The Grand Prize of the Automobile Club of America,' to be competed for annually in a road race to be conducted under the auspices of the Automobile Club of America under the rules adopted each year by the International Association of Recognized Automobile Clubs.

Resolved, That the Automobile Club of America organize and conduct each year the following events:

"1. The international road race for the grand prize of the Automobile Club of America under the rules of the International Association of Recognized Automobile Clubs as may be adopted.

"2. An international stock car race for the Briarcliff trophy.

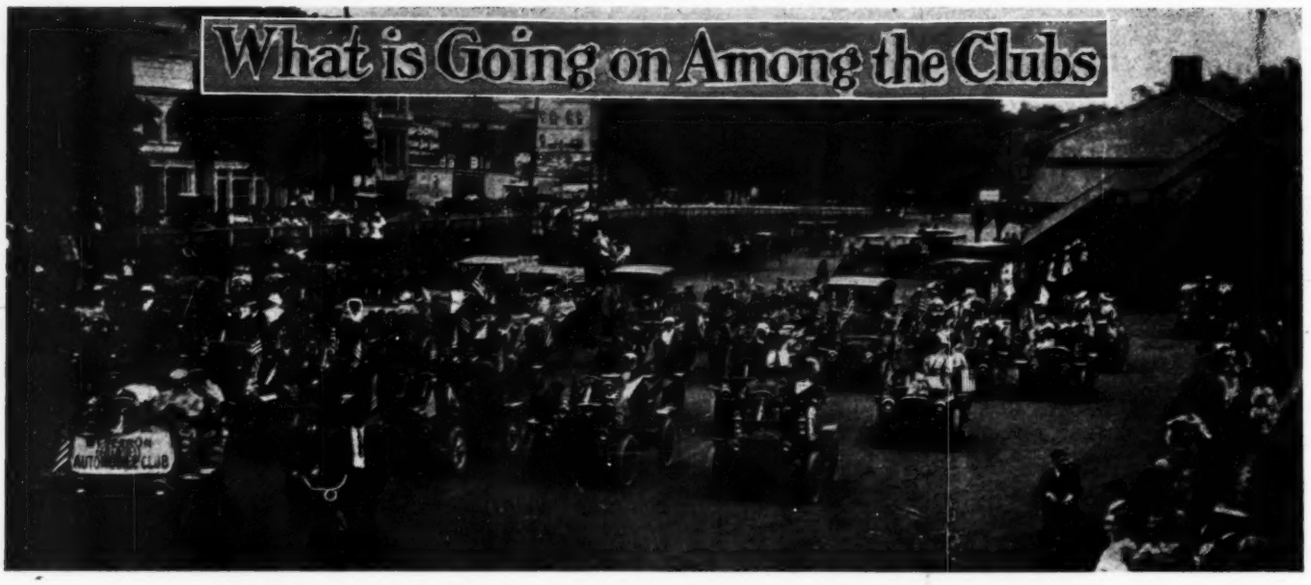
"3. A long distance touring car contest.

"4. A hill climbing contest.

"Resolved, That the secretary of the club be instructed to communicate these resolutions to all of the clubs and organizations with whom it is affiliated."

LOOKING FOR VANDERBILT COURSE LOOPS.

Jefferson deMont Thompson, chairman of the A. A. A. Racing Board, and A. R. Pardington, manager of the Long Island Motor Parkway, Inc., in company with different members of the Board of Supervisors of Nassau county, have made several trips over the highways of that county during the past fortnight with the object of discovering what roads might be available for combination with the parkway stretch for use for the Vanderbilt Cup race next October. They intimate that their pilgrimages have not been in vain, but withhold for the present any hint of the route they have in view.



Mount Vernon (N. Y.) Automobile Club Ready for the Start of Its First Parade and Run.

MICHIGAN'S STATE BODY ELECTS OFFICERS.

GRAND RAPIDS, MICH., May 29.—The annual meeting of the Michigan State Automobile Association was held in this city today. Officers were elected, a good roads committee appointed, and a banquet was held in the evening at the Grand River Auto Club, at which President George was the guest of honor.

The new officers elected for the ensuing year are: President, Edwin S. George; first vice-president, A. A. Barber; second vice-president, J. R. Jackson; third vice-president, James G. Hatfield; secretary, Dr. D. Emmet Welsh; treasurer, Sidney D. Waldron. The following chairmen were named for committees: Good roads, Edwin S. George; tours and contests, Sidney D. Waldron; membership, J. R. Jackson; law, Dexter M. Ferry.

The association decided to make good roads the principal field of its endeavor this year, and the good roads committee will outline a plan which will be followed by the clubs belonging to the association. The association includes clubs at Detroit, Grand Rapids, Kalamazoo, Hart, Flint, Battle Creek and Cadillac.

DAVIS AND RIKER WILL GO TO BUFFALO.

BRIDGEPORT, CONN., June 2.—President F. T. Staples, of the Automobile Club of Bridgeport, has appointed the standing committees. They and their chairmen are: Membership, H. D. Gates; road signs, Arthur K. L. Watson; contests, Ralph M. Sperry; road repairs, H. E. French; tours and runs, H. D. Gates; legislative, Goodwin Stoddard; public safety, Jonathan Godfrey.

S. T. Davis, Jr., and A. L. Riker were appointed to represent the club at the Buffalo convention.

MOUNT VERNON CLUB HAS INITIAL PARADE.

MOUNT VERNON, N. Y., June 1.—The parade and run of the Automobile Club of Mount Vernon on Saturday afternoon, May 23, was a marked success. The interest shown in the initial appearance of the club in an event of this sort and the large number of cars in line argues well for a continuance of the enthusiasm which the organization manifests. All Mount Vernon turned out to do honor to the occasion.

GENEVA CLUB CHOOSES OFFICERS.

GENEVA, N. Y., June 2.—At the annual election of the Geneva Automobile Club, the following officers were chosen: President, F. W. Herendeem; vice-president, M. F. Blaine; secretary and treasurer, C. W. Fairfax. It was voted to send delegates to the Buffalo convention.

MONTREAL'S CLUB REELECTS M'DONALD.

MONTREAL, QUE., June 1.—A year of prosperity, with a considerable growth in membership and a healthy increase in funds, were reported at the annual meeting of the Automobile Club of Canada, held at the Windsor Hotel, the vice-president, U. H. Dandurand, presiding in the absence of President McDonald.

The work done to secure good roads, especially the competition for $200 cash prizes offered for farmers who did the best work to improve the roads in front of their places, was the main feature of the report.

As a result of the work done by the club to suppress any breaches of the motor vehicle law, the report showed that there had been very few serious motor accidents during the past year, while not one of these could be attributed to reckless driving.

For the coming year the directors' program was to continue the good roads propaganda to the utmost limit. They intend to take the matter up with the Provincial Government, and will also spend as much money as they can to interest the proprietors on the Island of Montreal in improving their roadways. In addition to this, a series of route and caution signs will be tacked up on leading roads, showing the way to and from Montreal, and warning against dangerous pieces of road. The club also decided to take active steps to run down any motorists who break the laws by any kind of reckless driving.

The following officers were elected: President, Duncan Mcdonald; vice-president, U. H. Dandurand; directors, F. H. Anson, A. J. Dawes, Engene Tarte, Wm. Caruthers, A. Berthiaume and Clarence Smith; secretary- treasurer, G. A. McNamee.

STRONG ARGUMENTS FOR JOINING CLUBS.

PITTSBURG, June 2.—In Paul C. Wolff, its secretary, the Automobile Club of Pittsburg has a live wire full of effective electricity. In the club's monthly publication he puts up arguments for automobilists joining the club, which may well be read and and might well be used by other clubs in their canvass for members. The appeal says in part:

"The real reason for this club's existence is the work it is doing for the benefit of every user of a motor car in this vicinity, all of whom should certainly be interested in having the roads of the county properly maintained and marked by legible signs, in having a place where maps can be consulted and touring information secured, in the existence of a strong organization willing to protect them in case of unjust arrest, to endeavor to defeat any unfair legislation or local ordinances that may be introduced, and to work for the enactment of more liberal, up-to-date laws.

"This, the Automobile Club of Pittsburg is doing and in this it should have your support. As a member you also become a member of the State organization and of the American Automobile

Association, the National body. As a member of the former you aid in carrying on the work in Pennsylvania—of the latter in Federal legislation where the motorist must have recognition. You also benefit directly, having at your service valuable touring information

"There are, of course, many men to whom this means nothing. The main objects for which club, State and national organizations are working, look to the advantage or benefit of all motorists alike, members or non-members, and there will always be individuals so small that knowing that this work will go on whether they contribute or not, and if successful that they will share the benefits, will keep their money in their pockets. The work can and will be done without their help, for there fortunately is a larger class, who, if they see efforts being put forth in directions which will benefit them, are perfectly willing to do their part toward supplying the sinews of war. These we wish to add to our membership list."

NEW YORK CLUB URGES SOME DON'TS.

NEW YORK, June 3.—The Automobile Club of America's committee of safety, in a circular to the press, repeats its recommendations of a year ago as to certain desirable reforms as follows: "We urge upon motorists the wisdom of not using acetylene lights on ferries or in closely built-up and well-lighted portions of cities and towns; also not to cut out the muffler, except in places where the noise of the exhaust cannot annoy or offend other users of the highway; also to avoid flooding the engine with oil, thus creating offensive smoke and odor."

BUFFALO CLUB TO ENTERTAIN ORPHANS.

BUFFALO, June 2.—The Automobile Club of Buffalo has designated Wednesday, June 17, as Orphans' Day, and as there are few organizations in the country in which the appeal for a worthy charity meets with a more generous response, it is a foregone conclusion that none of the youngsters will be forgotten. The total membership of the club is now 1,243.

HARTFORD'S CLUB CONTINUES TO GROW.

HARTFORD, CONN., June 1.—Now that the endurance run is off the slate, the Automobile Club of Hartford is making ready for Orphans' Day on June 13. Needless to say, the orphans throughout the city anticipate the day with longing.

The membership of the club continues to increase, and it is safe to assume that if things hold out the way they have been going for some weeks past, the membership will touch the 300 mark by autumn. There is much demand for a hill climb this fall, and one will be held, though it is doubtful if the same course will be selected, which, to the minds of many, is far too dangerous.

PENNSYLVANIA FEDERATION NOW HAS 24 CLUBS.

PITTSBURG, PA., June 2.—There are now twenty-four clubs in the Pennsylvania Motor Federation, the Monroe County Automobile Association, the Johnstown Automobile Association, and the Beaver Falls Automobile Club having made applications for membership. An active campaign is also being made for individual members to add weight and recruits to the Federation's influence and fight for more reasonable local and State legislation.

TO BANQUET BROOKLYN'S BENEFACTORS.

BROOKLYN, N. Y., June 3.—By way of formal recognition of their untiring and successful efforts in securing the passage of the Cypress Hills bill, the Long Island Automobile Club on Friday evening will give Senator Eugene M. Travis and Assemblyman William A. DeGroot a dinner at the Crescent Club's country clubhouse on the Shore Drive. The bill provides for a boulevard connecting Highland Park with Forest Park, and continuing out to the good roads of Long Island.

FARMAN WANTS TO COMPETE WITH WRIGHT BROTHERS

PARIS, May 20.—There are hundreds of sportsmen in France who would readily put their name to a big check if by so doing they could fathom the Wright Brothers' mystery. France would like to believe that she leads the world in aeronautics, and at the bottom does believe it; but her peace of mind is troubled at too frequent intervals by reports from across the Atlantic of the doings of the two brothers from Dayton. Just when Delagrange or Farman have made a magnificent performance in the presence of thousands of spectators and on a ground as accessible to Parisians as Central Park is to New Yorkers, just when she is ready to shriek with excitement at the prospect of wresting the secret of the feathered world, a blunt message comes from the West announcing a performance that makes the French flight look like the scurry of a scared hen. So often have they come that the Frenchman who at first scoffed and still calls them *vols de canards,* has begun to doubt, and has finally reached such a state that he would give his hard cash to know the truth.

Henry Farman, the Frenchman of British origin who has nothing of the bluffer in his make-up, has endeavored to solve the mystery by a public challenge, and now comes forth with $5,000 stakes and the promise of a much larger amount if the Wright brothers will meet him in open competition in France for both time and distance flights. In his letter to the press the ex-automobile racing driver writes as follows:

"For some time I have seen in the newspapers that the Wright brothers have established numerous records, and that the next day everything connected with them has been denied. Personally I believe that the Wright brothers are very expert in aeronautics and capable of executing good flights. However, my small experience allows me to affirm that at any rate the published accounts of both recent and old flights are absolutely inexact. Among other examples I may mention the statement in one account that three or four miles had been covered in 15 minutes, or something approaching this. Now it is absolutely impossible to fly as slowly as this. I am ready, however, to issue a challenge for speed and distance to be run in France.

"I can offer immediately stakes of $5,000 and am certain of being able to get together a much larger sum if the Wright brothers accept the challenge. I propose this match with every confidence, for I have made more than 400 flights and covered a distance of about five kilometers, remaining in the air five minutes over a ground much too small, which obliged me to make numerous turns, and in addition was handicapped by the public. My present apparatus, in its actual condition, can remain 24 minutes in the air at a speed of 50 miles an hour, and with the improvements that I shall make I am certain in a short space of time not to be far from establishing an hour's record, but of course not on the Issy-les-Moulineaux ground." Farman is now busy packing up his apparatus for shipment to Ghent in Belgium, where he is under engagement to attempt flights on an open ground admirably suited for record breaking. Delagrange has left for Turin, Italy, in the hope of winning a pile of money for a fifteen-minute flight. Both Farman and Delagrange are using their Voisin apparatus with which they have made all their flights in the neighborhood of Paris. Farman has the intention of modifying his cooling system so as to carry a much larger quantity of water, the small amount now carried boiling away in a few minutes, whenever the engine is not running satisfactorily. During the summer he should take possession of the Flying Fish, also built by Voisin, but engined by Renault, with which he believes something sensational can be done, owing to the great improvement in its capacity for staying aloft gained by the new motor.

WM. E. METZGER'S CAT IS OUT OF THE BAG AT LAST

THE curtain has been raised on the "Metzger Mystery." It disclosed the Everitt-Metzger-Flanders Company, a million-dollar Detroit corporation, with B. F. Everitt, general manager of the Wayne Automobile Company, for its president; William E. Metzger, formerly of the Cadillac Motor Car Company, and still a large stockholder in the Northern Automobile Company, for its sales manager; and W. E. Flanders, once the Ford Motor Company's factory manager, now with the Wayne Automobile Company in the same capacity, at his old job of running the shop.

To give an idea of the financial strength of the new concern and at the same time let in some additional light on its genesis, it is to be noted that C. L. Palms, Dr. J. B. Book, W. T. Barber, Allen T. Bennett, of Port Huron, Thomas Walburn and E. Le Roy Pelletier are associated with the "big three," who lend their hyphenated names to Detroit's latest big automobile building enterprise. One may get a hint of the pushing policy to be pursued from Mr. Pelletier's being put in charge of the publicity, he having retired from the Maxwell-Briscoe Motor Car Company's advertising desk to assume it. Pelletier, by the way, is a considerable stockholder in the new company.

The campaign which will be inaugurated by the company calls for the production next season of 12,000 four-cylinder 30-horsepower cars. They will bear the nameplate "Everitt" and sell at not over $1,200. The chassis will have a 103-inch wheelbase be fitted with a magneto, and have three or four styles of body equipment. Later other models are in contemplation. The Everitt will be a licensed car.

This deal, says Metzger, has so long been in contemplation that a car of the proposed construction has already been built and so far tried out that sample machines will be ready by July 1 and shipments will begin in October.

The Everitt will be built at the factory of the Wayne company, which has been absorbed by the "big three," and probably at other big factories, in which Mr. Metzger is a large stockholder.

Fair Women Guests at Trade Banquet.

By way of celebrating its birth, the Everitt-Metzger-Flanders Company, of Detroit, gave a dinner Tuesday night at the Café des Beaux Arts, New York. B. F. Everitt, president; W. E. Metzger, sales manager, and E. LeRoy Pelletier, publicity engineer, were present on behalf of the company, to personally extend its hospitality. A novel innovation for a trade banquet was the invitation to the guests to bring their wives or sweethearts. Many took the hosts at their word, and, accordingly, the banquet was graced by the presence of Mrs. E. LeRoy Pelletier, Mrs. E. P. Chalfont, Mrs. F. J. Wagner, Mrs. R. G. Betts, Mrs. R. B. Johnson, Mrs. R. A. Field, Mrs. E. W. Merrihew, Mrs. Joseph Gilbert, Mrs. John H. Gerrie, Mrs. Alfred Reeves, Mrs. Ward, Mrs. Roy McCardell, Mrs. A. B. Tucker and Miss Lasker. Gold hand mirrors were given the ladies as souvenirs.

The piece de resistance of the menu was frogs' legs, personally conducted from Detroit by Messrs. Everitt and Metzger. Benjamin Briscoe acted as toastmaster, and Messrs. Chalfont, Reeves, Everitt, Pelletier, Metzger, McCardell, Schwarzkopf, Gilbert and DeLisser were among those called upon for speeches. The guests numbered close to fifty.

EVELAND TO HEAD TRADE ASSOCIATION.

NEW YORK, June 1.—The annual meeting of the stockholders of the New York Automobile Trade Association, Inc., was held at its headquarters in the Bryant Park Building this morning, and the following were elected as officers for the coming year: President, Frank Eveland, A. G. Spalding Brothers Company; first vice-president, General John T. Cutting, Oldsmobile Company of New York; second vice-president, E. C. Partridge, Wyckoff, Church & Partridge; treasurer, B. Blumenthal, West End Auto Palace; secretary and manager, Walter R. Lee. An amendment to the by-laws providing that all officers except the secretary shall be chosen from the members of the board of directors was unanimously carried, thereby increasing the latter from nine to twelve. The directorate, which was unanimously elected, consists of the following: C. Andrade, Jr., R. M. Owen Company; W. Harradon Victor Auto Storage Company; Richard Newton, Atlantic Motor Car Company; C. P. Skinner, Mitchell Motor Company; R. B. Van Dyke, American Locomotive Auto Company; Peter Fogarty; S. B. Bowman, S. B. Bowman Auto Company; and George Bennet, the White Company. The treasurer's report showed the association to be in a very prosperous condition.

WALTER WHITE'S INJURIES NOT SERIOUS.

Walter White's injuries, received on the occasion of the hill-climb at Cincinnati last week, are proving not to be as serious as was at first reported, although they will keep him confined to the hospital for several weeks to come. Of the many conflicting stories that got abroad concerning the cause of Mr. White's mishap, none was entirely correct. It seems that in his practice spins, the driver of the White received a wrong impression as to where the finish line of the climb was to be, and did not discover his mistake, until coming up at better than a mile a minute, he saw the spectators banked where he expected to find the finish line. He managed to get across the line all right, but the turn beyond the car skidded and turned turtle.

BOSTON DEALERS ELECT NEW OFFICERS.

BOSTON, June 1.—The annual meeting of the Boston Automobile Dealers' Association, Inc., was held to-day at the offices of the association, 5 Park square, and as there was much interest in the choice of officers the attendance was large. Reports were presented by the secretary and manager of the annual show, Chester I. Campbell; by Treasurer F. A. Hinchcliffe, and other officers and committees, after which the members proceeded to ballot for officers, the result being as follows: President, John H. MacAlman, agent for the Columbia; vice-president, J. S. Hathaway, manager the White Company; treasurer, F. A. Hinchcliffe, manager of the Winton Motor Carriage Company; clerk, Chester I. Campbell; directors, John H. MacAlman, J. S. Hathaway, F. A. Hinchcliffe, J. W. Maguire, of the J. W. Maguire Company, agents for the Pierce; A. P. Underhill, of the Reed-Underhill Company, agents for the Knox; Charles E. Fay, manager the Ford Company; C. F. Whitney, manager of the Park Square Auto Station, agents for the Berliet and the Stoddard-Dayton; E. A. Gilmore, of the Whitten-Gilmore Company, agents for the Thomas; and George H. Lowe, of the Lowe-Crawford Company, agents for the Crawford; secretary, Chester I. Campbell. Mr. Hathaway succeeds Mr. Lowe as vice-president. Messrs. Whitney and Gilmore are new members of the board of directors. At a meeting of the directors following the stockholders' meeting Chester I. Campbell was unanimously elected as manager of the Boston Automobile Show to be held in 1909.

A CENTURY A DAY FOR ONE HUNDRED DAYS.

INDIANAPOLIS, IND., June 1.—With a century a day for one hundred consecutive days as its object in view, a Premier car started to-day on a brand new variety of long distance stunts. From to-day until September 8, the Premier Motor Manufacturing Company proposes to have its crew keep the car running, good weather or bad. The Premier will carry a full quota of passengers.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A petition has been circulated among the Hartford, Conn., workingmen to the effect that the city patronize home industry and purchase a Pope-Hartford ambulance, even though another maker would do the work for nearly 25 per cent. less.

Michigan's municipal executives are evidently very much taken with the merits of the Franklin, as within the last fortnight no less than three of them became owners of 1908 Franklin models. They are Mayor C. C. Green, of Battle Creek; the Mayor of Traverse City, and the Mayor of Muskegon, Mich.

As illustrating the longevity of Winton cars it is interesting to note that Charles Gorndt, of Cleveland, owns a 1900 single-cylinder Winton that outspeeds and outclimbs everything under 30 horsepower that he has encountered in his travels. Gorndt's single-cylinder measures 5 3-8 x 5 3-8 and is rated at less than 12 horsepower.

In making mention of the changes in the sales management of the Spare Motor Wheel of America, Ltd., in THE AUTOMOBILE last week, it was inadvertently stated that the sales department at 237 Michigan avenue, Chicago, was a branch house, while as a matter of fact, it is the main office of the company. The factory is located at St. Anne, Ill.

That the creditors of the Toledo Motor Car Company are in no wise in a hurry to realize on their claims against that company is shown in the fact that they authorized the receivers to reject an offer of $500,000 for the plant as it now stands. F. A. Scott, of Cleveland, who was appointed receiver some time ago at the request of the creditors, is now making a complete inventory of the assets of the concern and his present judgment is that it ought not to be disposed of for less than $800,000.

Even the claims of his constituents and the popular prejudice of the rural voter against having his representative in Congress mixed up with them "durned ottomobeels," could not deter Speaker Joe Cannon from accepting the invitation of Congressman Landers to accompany him in a 40-horsepower Studebaker from Washington to Indiana. Others in the party who will participate in the two weeks' outing are Senator Hemingway, Mr. Buzby, secretary to the Speaker, an official cabinet photographer, and C. F. Redden, manager of the New York branch of the Studebaker Automobile Company. Refreshments for the party are being carried in a 30-horsepower Studebaker, which doubtless will not be lost sight of during the trip.

Just to show that the Detroit Electric could do it, George Bacon, chief engineer of the Anderson Company, Detroit, Mich., builders of the car, and P. Driscoll, of Harrisburg, Pa., the company's eastern sales manager, drove one of the Detroit cars from Washington to Baltimore under its own power. The distance is about 56 miles by road, but the achievement lies not so much in the distance covered as in the nature of the road, which is hilly and has a poor surface. The run was made on Monday and was repeated in the opposite direction the next day. The handy way in which the Detroit car did the trick resulted in the Dupont Company taking the agency for it in Washington. An attempt will be made on the Philadelphia-Atlantic City run later.

NEW AGENCIES ESTABLISHED.

The Goodyear Tire & Rubber Company has just opened a new branch store at 2005 Euclid avenue, Cleveland, O., under the management of C. C. Hamerle, formerly connected with the New York office.

Michelin tires will soon be represented in Cleveland, the Michelin company having decided to open a branch store at 2001 Euclid avenue, next door to the new quarters of the Goodyear company. Richard Tracy will be in charge.

The Lancaster Automobile Company, Lancaster, Pa., agents for the Pope-Waverley and the Buick, have added the Franklin to their line, while the Kentucky Automobile Company, Louisville, Ky., has done likewise in its territory, and the De Long Machine Company, Shreveport, La., has made arrangements to handle the Franklin line exclusively.

A. A. Lederman, for the past four years assistant engineer of the George N. Pierce Company, Buffalo, N. Y., has just been appointed agent for the Pierce cars in central New York. Mr. Lederman has opened temporary offices in the Steward building, Utica, N. Y., pending the erection of a garage. The new agency will be known as the A. A. Lederman Company.

The Foss-Hughes Motor Car Company, Broad and Race streets, Philadelphia, Pa., has taken over the business of the Noblitt & Fassett Company, and in future will act as agents for the Pope-Hartford car. John H. Fassett, who was president of the latter concern, will be identified with the Foss-Hughes company, with which he severed his connections a few months previous, to take charge of the other concern.

RECENT TRADE REMOVALS.

The Swinehart Clincher Tire Company's New York branch is now located in its new quarters at 875 Seventh avenue, near Fifty-ninth street, New York City. The entire building at the address in question has been leased by the Swinehart interests, thus permitting of the installation of much superior facilities than those available at the old place.

PERSONAL TRADE MENTION.

Burt Morley, formerly with Hayden Eames and the Ferro Foundry & Machine Company, of Cleveland, O., has just been appointed manager of the Diamond Rubber Company's branch at Detroit, Mich.

W. N. Booth has just been appointed assistant manager of the Oldsmobile Company of Cleveland, the branch house of the Olds Motor Works, of Lansing, Mich. Ralph R. Owen is the branch manager.

E. B. Gallaher, manager of the American branch of the Maja Company, Ltd., returned last week from a flying trip to the other side, where he has been for the past three weeks on business connected with the Maja Company and the affairs of its American branch.

H. N. Anderson, formerly with the Dayton Motor Car Company, Dayton, O., has just joined the engineering forces of the Speedwell Motor Car Company, also of the same city. The latter concern now has a large new plant in the course of construction and its business is growing rapidly.

NEW TRADE PUBLICATIONS.

Hartford-Suspension Company, Jersey City, N. J.—"Auto Comfort" is the latest comer to the field of automobile trade house organs. As its name implies, its mission is to tell of the comfort and safety derived from the use of the Truffault-Hartford shock absorbers, although it will naturally contain much other matter of interest to the autoist and driver. Copies will be forwarded for the asking.

Warner Instrument Company, Beloit, Wis.—A pamphlet on the speed-indicator question that will be found of considerable value and interest by autoists generally has just been issued by this firm, under the title of "The Final Truth About Speed Indicators." It is written in a plain, everyday, common-sense manner, and there are no unintelligible technical terms to confuse the layman, although the subject is one that is difficult to explain without the use of such aids. Copies will be forwarded gratis to autoists and drivers upon request.

Boston Gear Works, Norfolk Downs, Mass.—In addition to describing and illustrating the full line of gears of every description made by this firm, its catalogue, for 1908, which is more on the style of a handbook, also contains a number of handy tables of engineering data. It is an 88-page pamphlet in paper cover and contains a great deal of information concerning gears of every type in condensed form. In addition to gears, this firm also makes cast-iron grooved pulleys, star escape wheels, standard brass ratchets, heavy clock and motor springs, auto steering gears, chains, universal joints and the like.

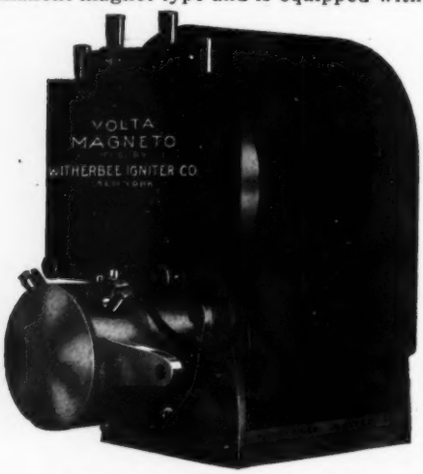
Empire Metal Company, Syracuse, N. Y.—"Bearing on the Question" is the title of a booklet that has to do with bearing metals and particularly with "Empire" bearing metals. This concern has been in the business of making bearing metals for the past 28 years, so that its statement that no one alloy can be proper for all kinds of service may well be taken as the result of ripe experience. The numerous brands manufactured, such as "Genuine," "Silver Bronze," "Samson," "Motor," "Imperial," "Copper Hardened," "Triumph," and others, are described and the service they are intended for outlined. Another booklet from the same concern describes its silver metal galvanizing flux. It makes improved galvanizing possible at a decreased cost.

Oakland Motor Car Company, Pontiac, Mich.—One of the most interesting things in the catalogue of this concern, to the seeker after a car, is the little diagram to be found near its close. It is a simple affair, and not much space is given to it, but it shows better than several pages of argument could, how the annoying vibration of the two-cylinder vertical motor has been overcome in the Oakland power plant. Rather a novel and unusual feature of this catalogue are some reproductions of blueprints in natural tints, showing different views of the chassis and chief essentials of the car, drawn to scale. It is a 32-page pamphlet in buff covers, with the name Oakland embossed on them, and is an attractive piece of catalogue work, from the typographical point of view, as well as that of the man who is seeking information about the Oakland cars.

Stewart & Clark Manufacturing Company, Chicago.—One of the first things to greet the eye on opening the very attractive 1908 messenger of this concern is the ironclad five-year guarantee which the makers of the Stewart and American instruments give with every instrument they manufacture. This guarantee covers materials, mechanical construction and accurate operation of the instrument, flexible shaft and all connections, any instrument failing to give proper satisfaction or proving defective in material or construction during that period being repaired or replaced free of charge. Throughout the remaining 56 pages of the attractively illustrated catalogue the Stewart & Clark Company show the painstaking manner in which the instruments that can be covered by such a guarantee as this are made. There are no secrets about the Stewart and American speedometers, as every part is illustrated and its functions described. The book is printed on heavy surfaced paper in a most attractive style, while the illustrations, made from photographs, are unusually well executed. Nothing is left untold that those in search of speedometer information would wish to know.

INFORMATION FOR AUTO USERS

Volta High-Tension Magneto.—This is an extremely simple type of high-tension magneto of the self-contained type that is now being put on the market by the Witherbee Igniter Company. As will be seen from the accompanying illustration, the Volta is of the usual permanent magnet type and is equipped with



DISTRIBUTER END, VOLTA MAGNETO.

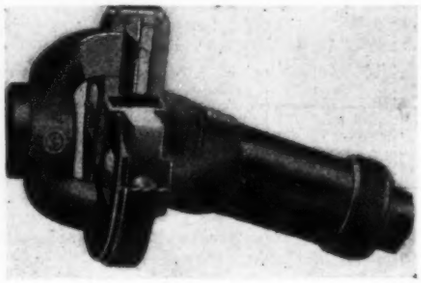
a synchronous distributer. Both the armature and the distributer shafts are mounted on annular ball bearings so that even the small amount of attention ordinarily required for lubrication on such a machine has been further reduced, only two or three drops of oil per bearing being required each month. The construction throughout is of the most simple and durable kind. The same concern is also placing on the market the Wico storage battery charger, the Witherbee Igniter Company having procured the rights to manufacture and sell this

NEW WICO STORAGE BATTERY CHARGER.

charger from the inventor, M. R. Hutchinson. The illustrations show the charger connected to an electric light socket and a storage battery, the jar shown containing the alternating current rectifier. This changes an alternating current to a direct current, while the lamps cut the current down to the proper rate for charging. The small lamp shown is a pilot light to enable the state of the charge of the battery to be determined. By reversing the spring controlled switch forming part of the set, this five-ampere lamp is lighted and unless it burns brightly the battery is not fully charged. The entire outfit is designed to be carried on the car in the pressed steel containing case provided. It is extremely convenient for touring, and more than one set can be charged at a time.

Rubberized Leather.—This is a new departure in chrome tanned leather, insuring great strength and extra wearing qualities. It is being manufactured and marketed by the Gloversville Rubberized Leather Tire Company, Gloversville, N. Y., and is the result of a new secret process, which makes the material water resisting, as well as soft and pliable, always retaining its shape after wetting. It is especially adapted for the manufacture of leather tire and leather treads. This firm was one of the first to take advantage of the growing demand for a specially prepared chrome leather for automobile use, and the universal favor with which this has met from all tire, tread and casing manufacturers shows the step to have been well taken.

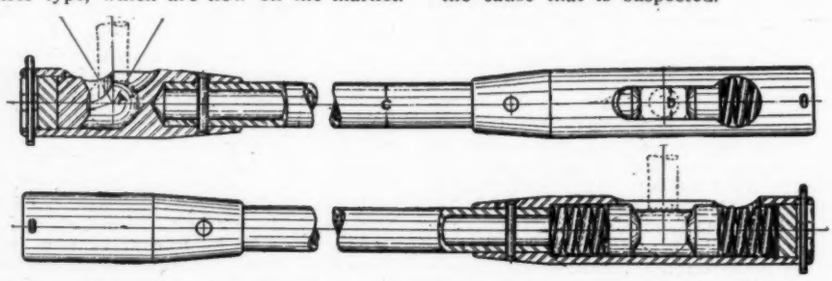
Kinsler-Bennet Pin Universal.—The Kinsler-Bennet Company, Hartford, Conn., have just placed a new universal joint of the pin type, designed especially for automobile use, on the market. It is composed of two yokes, four pins and an outer ring, it being possible to mount or take down all these parts without the aid of tools, as no screws or bolts are employed in the construction of this new universal joint. The yokes are held by the plate in such a manner that it is impossible for them to



ASSEMBLY KINSLER-BENNET UNIVERSAL.

spread, while the outer ring holds the pins in position, and is itself held by two shouldered steel spring plugs, which also provide a means of oiling. In the center of the joint is a chamber holding a considerable quantity of oil. From this, the oil is fed through a hole in each pin connecting with outlets to all of the bearings so as to provide effective lubrication. All the working parts are of hardened steel, the yokes being drop forgings. This joint has been designed particularly with a view to use on automobiles where the service conditions are unusually severe, but it is also being marketed for machine tool use.

"Long Arm System" Parts.—The latest addition to its line of automobile parts, recently made by the Long Arm System Company, Cleveland, O., is a new set of steering reaches of the ball-socket and buffer type, which are now on the market. They are furnished in three sizes, suitable for 1, 1 1-8 and 1 1-4-inch balls, and are of interest chiefly for their simplicity which should make for great reliability in service. The accompanying sketch serves to show the general construction. The ball is securely held in the socket by the plug screwed in the end, and its retaining cotter pin. To avoid the fine pitch threads ordinarily used for similar plugs, requiring a more or less secure clamp to keep them from wearing loose with the constant pounding, and at the same time to provide a close adjustment for wear, a 12-pitch thread, tightly fitted, is used and close adjustment provided by an extra cotter pin hole in the socket case, as shown. This allows an adjustment of 1-12 turn, or 1-144 inch. The sockets are hardened and the buffer springs japanned to prevent rusting. Heavy wrought iron pipe, pinned and brazed to the ends, is used for the center member. The reaches are furnished in any desired length.



DETAILS OF THE NEW BALL-SOCKET AND BUFFER "LONG ARM" STEERING REACHES.

India Auto Oilstone.—This is the latest addition to the very extensive range of oilstones for special purposes that is marketed by the Pike Manufacturing Company, Pike, N. H. It is intended particularly to replace the use of the file for keeping vibrator contact points in good shape, and as the makers put it, "the advantage of the new automobile oilstone over the file is the same as that derived in the use of an oilstone in the sharpening of a knife, instead of rasping it away with a file, the result, in the case of the file, leaving a rough surface, while the stone leaves the points polished and gives a very smooth contact." Another disadvantage of the file that will occur, even to the most inexperienced autoist, is the unnecessarily large amount of the costly platinum that is filed away, particularly when the points have been allowed to go for such a length of time without proper attention that they have become "pitted." A little regular attention with an India oilstone will keep them brightly polished and in the highest state of efficient working, as much of the skipping and missing of an engine is due to the poor condition of the vibrator contact points, although this is not always the cause that is suspected.

INDIA AUTO STONE AND CASE.